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CORRECTIVE ACTION PLAN MODIFICATION
FORMER DUPONT KENTEC FACILITY

Date: October 2005

Project No.: 18984398.00050

Revision 1

DUPONT

CORPORATE REMEDIATION GROUP
An Alliance between
DuPont and URS Diamond- North Carolina

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October 24, 2005

Mrs. Rosemarie Ballance, L.G.
Hydrogeologist
North Carolina Department of Environment and Natural Resources
Division of Water Quality – Aquifer Protection Section
943 Washington Square Mall
Washington, NC 27889

RE: Corrective Action Plan Modification, Response to Comments
Former DuPont Kentec Facility
Kinston, Lenoir County, NC
APS Incident 6334

Dear Mrs. Ballance,

DuPont is pleased to submit a revised copy of the Former DuPont Kentec Corrective Action Plan Modification with the following response to your comments by letter dated September 20, 2005 (please refer to this letter for your corresponding comments):

1. The public notification section has been modified and notification has been submitted along with this letter and re-submittal. Copies of signed certified mail return receipts will be submitted upon receipt from notified contiguous landowners.

2. The required form has been completed and is attached.

3. Conflicting NCAC 15A 2L standards exist on the NCDENR website, NC 2L standards posted on http://gw.ehnr.state.nc.us/gw_standards.htm indicate the 1,1-dichloroethane (DCA) standard as 700 ug/l. However, as noted in most recent documents (4/1/2005) posted on the NCDENR Classifications and Standards website the standard is 70 ug/l. References to 700 ug/l have been corrected throughout the document and Table 2 has been modified to reflect the correct standard. The change does not impact the scope of the document. DCA groundwater concentrations across the site are currently below 70 ug/l.

4. References to the source of surface water standards listed on Page 3 have been added to the table. The criteria are from the USEPA and NC Criteria Table (10/31/2004) on the NCDENR Classifications and Standards website.

5. The table on Page 8 indicates the target cleanup level specified in the Corrective Action Plan submitted in 1991 (150 ug/l) for 1,4-dioxane and is provided for reference only.

6. The table on Page 8 is correct both the standard at the time of the original Corrective Action (1991) and the current NC 2L standard for DCE is 7 ug/l.

7. This statement has been modified to exclude Figure 9 (MW-11A).

8. MW-9 currently is not monitored on a routine basis, for the purpose of natural attenuation monitoring MW-9 will be added to the routinely monitored wells in place of MW-8; therefore, it was added to the section titled "*Additional Routine Monitoring*".

9. MW-14A has been added to the sampling program.

10. As stated in the CAP modification, predictive groundwater modeling was performed at the site in 2001 to evaluate the impact to existing aquifer conditions attributable to the proposed infiltration of treated groundwater at the site. The computer program Visual MODFLOW was used to model those conditions. Numerous site-specific parameters were input into the model, including horizontal and vertical hydraulic conductivity. Hydraulic conductivity data generated for the site during previous site investigations ranged between 0.1 ft/day to 100 ft/day. On review it was apparent that two anomalously high conductivity values were documented to exist at the site at monitoring well MW-7B (90 ft/day) and MW-8 (100 ft/day). The remaining conductivity values were grouped between 0.1 ft/day and 30 ft/day.

    The anomalously high conductivity values calculated for MW-7B and MW-8 were disregarded as outliers and possibly resultant from incorrect assumptions during the analysis of the recovery data. Specifically, the dewatering of the sand pack surrounding the screened section of the well will initially, under certain circumstances, exhibit an accelerated recovery slope as the sand pack drains into the screen followed by a second recovery slope more typical of flow from the undisturbed aquifer into the well. If the initial slope is incorrectly selected the results will be skewed to be more representative of the hydraulic conductivity of the sand pack material and not the aquifer.

    During the calibration of the MODFLOW model the various parameters input into the model were adjusted within ranges deemed acceptable based on site data to produce model results that matched the actual values measured in the field (such as existing potentiometric surface maps). In respect to hydraulic conductivity, the final values used in the model were between 1 and 12 ft/day.

    More recent modeling efforts were performed using GWPATH to evaluate potential migratory pathlines of particles at the site. Unlike MODFLOW, the governing equations used in GWPATH assume that site conditions are uniform in respect to porosity and hydraulic conductivity with variations attributable to changes in static head elevation. Subsequently, a hydraulic conductivity value of 6 ft/day (mean of data used in MODFLOW model for consistency purposes) was selected for the GWPATH analysis. It should be noted that regardless of what hydraulic conductivity value is selected the particle pathlines will follow the same trajectory with only particle travel time being affected.

    Section 4.1 of the CAP modification had been modified to indicate the above.

11. NCAC 15A 2L .0114(b) requires that the local Health Director and the chief administrative officer of the political jurisdictions in which the contaminant plume occurs, and all property owners and occupants *within or contiguous to the area underlain by the contaminant plume*, and under the areas where it is expected to migrate. Currently the plume has not migrated off the UNIFI (former DuPont) property. The table on Page 24 includes all contiguous landowners to the UNIFI (former DuPont) property even though Figure 13 indicates all parcel records in the immediate area for reference. In addition, multiple properties may be owned by the same owner.

12. Figure 2 has been modified to include these wells.

13. Figure 13 has been modified to include these wells.

If you have any questions or require additional information please contact me at (704) 362.6634.

Sincerely,

Andrew Alcazar
Project Director
DuPont Corporate Remediation Group

Aa/jvl

cc:

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DIVISION OF WATER QUALITY
Certification for the Submittal of a Corrective Action Plan
Under 15A NCAC 2L .0106(l)

Responsible Party: E.I. DuPont de Nemours and Company
Address: 4417 Lancaster Pike
City: Wilmington **State:** DE **Zip Code:** 19805

Site Name: Former DuPont Kentec Facility
Address: 4610 Braxton Road
City: Grifton **County:** Lenoir **Zip Code:** 28530

Groundwater Section Incident Number: 6334

I, John V. Lockhart, a Professional Engineer/Licensed Geologist (circle one) for URS Corporation (firm or company of employment), do hereby certify that the information indicated below is enclosed as part of the required Corrective Action Plan (CAP) and that to the best of my knowledge the data, site assessments, engineering plans and other associated materials are correct and accurate.

Each item must be initialed by hand by the certifying licensed professional.

1. JVL A listing of the names and addresses of those individuals required to be notified to meet the notification requirements of 15A NCAC 2L .0114(b) are enclosed. Copies of letters and certified mail receipts are also enclosed. A copy of the newspaper notice and the title of the newspaper(s) where it was published must be included, if applicable. Certified mail receipts will be submitted upon receipt from landowners.

2. JVL A Professional Engineer or Licensed Geologist has prepared, reviewed, and certified all applicable parts of the CAP in accordance with 15A NCAC 2L .0103(e).

3. JVL A site assessment is attached or on file at the appropriate Regional Office which provides the information required by 15A NCAC 2L .0106(g).

4. JVL A description of the proposed corrective action and supporting justification is enclosed.

5. JVL A schedule for the implementation and operation of the CAP is enclosed.

6. JVL A monitoring plan is enclosed which has the capacity to evaluate the effectiveness of the remedial activity and the movement of the contaminant plume, and which meets the requirements of 15A NCAC 2L .0110 and .0106(l).

(OVER)

GW-100(l) Rev.7/00

7. JVF The activity which resulted in the contamination incident is not permitted by the State as defined in 15A NCAC 2L .0106(e).

In addition, the undersigned also certifies that to the best of my knowledge and professional judgement and in accordance with the requirements of 15A NCAC 2L .0106(l), the following determinations have been made and are documented in the CAP:

8. JVF All source of contamination and free product have been removed or controlled in accordance with 15A NCAC 2L .0106(f) and (l). (15A NCAC 2L.0106(4)(2))

9. JVF The contaminants have the capacity to degrade ~~and~~ and/or attenuate under the site-specific conditions.

10. JVF The time and direction of contaminant travel can be predicted with reasonable certainty.

11. JVF The migration of the contaminant will not result in any violation of the standards specified in 15A NCAC 2L .0202 at any existing or foreseeable receptor.

12. JVF The contaminants have not and will not migrate onto adjacent properties, or adjacent properties are served by public water supplies which cannot be influenced by contaminants migrating off-site, or adjacent landowners have consented in writing to a request allowing the contaminant upon their property.

13. JVF Groundwater discharge of the contaminant plume to surface waters will not result in a violation of 15A NCAC 2B .0200.

14. JVF The area of the contaminant plume has not been identified by a state or local government groundwater use planning process for resource development.

15. JVF All necessary access agreements needed to monitor groundwater quality have been or can be obtained.

(Please Affix Seal and Signature)

NOTE: Any modifications made to this form may result in the return of your submittal.

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1.0 INTRODUCTION

Corrective Action was implemented at the site in 1991. E.I. duPont de Nemours initiated corrective action at the Kentec parts cleaning facility in response to a Notice of Violation (NOV) from the North Carolina Department of Environment and Natural Resources (NCDENR) on February 4, 1991. The purpose of this corrective action modification is to propose enhanced natural attenuation with long term monitoring of 1,4-dioxane in the shallow groundwater at the site. A summary of the site history and hydrogeologic features is followed by a review of the groundwater treatment system performance and an evaluation of the both the current and proposed corrective action at the site.

1.1 Site History

Kentec began operation in 1969 as a parts-cleaning facility for the DuPont Kinston Plant. The facility was owned and operated by James Enterprises from 1969 until late 1981. DuPont purchased Kentec from James Enterprises in late 1981. The site was transferred to Invista S.A.R.L a subsidiary of Koch Industries in 2004 and is currently owned by UNIFI Kinston LLC. A site location map is included as Figure 1.

The plant cleaned packs, powdered metal, and spinerettes used in the manufacture of Dacron®. The cleaning process consist of dipping parts in triethylene glycol to remove byproducts of the Dacron® process and then rinsing with water. The resultant water was then collected in the onsite wastewater treatment system and discharged to the adjacent unnamed tributary via a NPDES permit. Spent glycols were sent offsite for recycling and returned to the site for re-use.

A groundwater assessment was conducted at the DuPont Kentec facility between April 1987 and December 1990. The results of this investigation are presented in the CH2M-Hill Kentec Groundwater Assessment report dated April 1991. The report showed that shallow groundwater beneath the Kentec facility was contaminated with three organic compounds: 1,4-dioxane, 1,1-dichloroethene (DCE), and 1,1-dichloroethane (DCA). Furthermore, it was determined that these contaminants had migrated beyond the boundaries of the Kentec facility. The underlying Peedee aquifer had not been impacted. Based on routine groundwater sampling it was determined that seven potential sources of contamination at the site were identified. The sources were subsequently removed during the course of the site assessment.

1.2 Current Corrective Action

The Kentec Corrective Action Plan (dated July 11, 1991) presented the details for remediation of shallow groundwater at the DuPont Kentec facility. The corrective action plan (CAP) consists of four primary components: groundwater collection, groundwater treatment, discharge of treated water, and monitoring.

Shallow groundwater is collected and removed using a groundwater interceptor trench (GIT). Groundwater collected in the GIT is pumped from two extraction wells, one located at each end of the southern leg of the trench. The groundwater is pumped to a chemical oxidation treatment system, which operates by oxidizing the organic compounds using a combination of ozone and ultraviolet light. A carbon adsorption system is used to provide a final polishing step prior to discharge. Treated groundwater is injected into an infiltration gallery per NC Non-Discharge Permit No. WQ0005906.

1.3 Proposed Corrective Action Objectives and Cleanup Levels

The proposed corrective action remedy for the site consists of enhanced natural attenuation and long-term monitoring.

The remedial goal for the site is to ensure the protection of human health and the environment. The environmental conditions of the site indicate that this goal is currently being met with or without operation of the extraction and treatment system. To ensure that protection of human health and the environment is maintained in the future, DuPont proposes to implement a corrective action program to confirm that migration of impacted groundwater will not adversely impact potential receptors. Enhanced natural attenuation has been selected as the primary corrective action remedy for the site, with long-term groundwater monitoring.

As specified in 15A NCAC 2L.0106(l), the following cleanup levels must be achieved in order for monitored natural attenuation to be proposed and acceptable:

- that contaminant migration will not result in any violation of applicable groundwater standards (in 15A NCAC 2L.0202g) at any existing or foreseeable receptor
- that, if the contaminant plume is expected to intercept surface waters, the groundwater discharge will not possess contaminant concentrations that would result in violations of standards for surface waters contained in 15A NCAC 2B.0200
- that the person making the request will put in place a groundwater monitoring program sufficient to track the degradation and attenuation of contaminants and contaminant by-products within and down gradient of the plume and to detect contaminants and contaminant by-products prior to their reaching any existing or foreseeable receptor at least one year's time of travel upgradient of the receptor and no greater than the distance the groundwater at the contaminated site is predicted to travel in five years

The applicable standards reference above are:

Constituent of Concern	Regulation (media)	Minimum Standard
DCE	15A NCAC 2L (groundwater)	7 ug/l
DCA	15A NCAC 2L (groundwater)	70 ug/l
1,4-dioxane	15A NCAC 2L (groundwater)	7 ug/l

Constituent of Concern	Regulation (media)	Minimum Criteria	Reference
DCE	15A NCAC 2B (surface water)	340 ug/l	ECOTOX
DCA	15A NCAC 2B (surface water)	3,400 ug/l	Handbook of Environmental Data / RAIS
1,4-dioxane	15A NCAC 2B (surface water)	305 ug/l	15A NCAC 2B Provisional Standard

Notes:

These criteria are based on Class C surface waters (non-drinking supply), protection of human health and water organism. Listed criteria can be found in the "USEPA and NC Criteria Table" (10/31/04) available through the NC Classification and Standards Unit of the NCDENR Division of Water Quality.

ECOTOX = USEPA ECOTOXicology Database System

RAIS = USDOE, Environmental Management, Oak Ridge Operations, Risk Assessment Information System

2.0 SITE CONCEPTUAL MODEL

2.1 Identification and Characterization of Potential Source Areas

Identification and characterization of potential source areas was performed during site assessment activities from 1987 to 1990. During the process the following areas were identified and immediate corrective action (excavation, repairs, etc) was performed as needed:

Drainfields

According to the 1991 Kentec Groundwater Assessment (CH2M-Hill, 1991), elevated concentrations of COCs were detected in soil samples collected from the three drainfields on the north side of the plant. These drainfields were active from 1982 to 1986 and discharged wastewater from the part washing processes in the plant.

Wastewater Settling Ponds

On the southern end of the main Kentec building, underground concrete settling chambers were used to remove solids from rinsewater originating from the plant prior to 1988. Soil sampling of the solids in the tanks indicated elevated concentrations of triethylene glycol, 1,4-dioxane, trichloroethane, DCA, and DCE. Soil samples beneath the tanks (once removed) indicated low concentrations of 1,4-dioxane. Soil was removed from the tank locations and backfilled with sand.

Wet Well

A reinforced concrete wet well to collect wastewater from the main plant was operated prior to 1991 adjacent to the northeast corner of the main building. Under suspicion that the well maybe leaking a fiberglass liner within the well was installed as a preventative measure.

Piping

The wastewater treatment system main pipe that flowed into the wet well was constructed of polyvinyl chloride (PVC). During assessment activities the pipe was found to be cracked in two places and was subsequently replaced with above ground piping.

Surface Disposal of Wastewater

In 1987, a spill of triethylene gylcol occurred in the area of prior wastewater disposal in the drainage way between State Road 1802 and the facility. After excavation of the areas in 1990, low levels of 1,4-dioxane were detected in the remaining soil. Wastewater was disposed of in the drainage way from 1969 to 1982.

Containment Areas

During an audit of the cleaning areas inside the main plant building and above ground storage tank area during assessment activities, it was discovered that concrete dikes designed to collect leaks and spills contained cracks and visible blemishes. The cracks and dikes were repaired with epoxy prior to the 1991 CAP.

2.2 Identification of Constituents of Potential Concern (COPCs)

Constituents of potential concern were identified in the 1991 CAP. No additional COPCs have been identified in the groundwater at the site since 1991.

DCE is still present in monitoring wells at levels below but within one standard deviation of the NC 2L standard in at least one well since 2002. 1,4-dioxane is present in monitoring wells above the NC 2L standard. The maximum detected concentration, since 2002, of DCA is currently more than 50 times less than the NC 2L standard.

Therefore, for the purposes of this CAP modification, only 1,4-dioxane and DCE are considered COPCs. Any DCA references or data in this report are provided to show past performance of the prior corrective action only. In addition, since 1,4-dioxane is inherently more mobile in groundwater than DCE and has been historical detected in the same wells as 1,4-dioxane, the focus of this corrective action remedy is primarily 1,4-dioxane.

2.3 Site Geology and Hydrogeology

2.3.1 Geology

According to the Kentec Corrective Action Plan (CH2M-Hill, 1991), three main sedimentary units are present at the site. The upper unit appears to be very coarse sand and silty sand and varies from absent on the west side of the main Kentec buildings to 10 feet thick across the site. This surficial unit overlays the Peedee Formation regionally. Beneath this unit lays an approximate 20 foot thick unit of stiff clayey and sandy silts belonging to the upper portion of the Peedee Formation. At further depth, dark gray glauconitic sand and stiff clayey silts and clayey sands are encountered. Further geologic information and cross sections are provided from the Non-Discharge Permit Applications submitted to NCDENR in June 2001 are provided in Appendix A.

2.3.2 Hydrogeology

Groundwater elevation (April 2005), varied from 26 ft MSL offsite to the east to 24.5 ft MSL at the southwest corner of the GIT. Elevation continues to decrease further south to 21.2 ft MSL (MW-14) downgradient of the GIT towards the unnamed tributary. Groundwater elevation on the west of unnamed tributary is about 24.5 ft MSL near MW-12. The unnamed tributary elevation to the west varies from 23 ft MSL near MH-DH2 to 21 ft MSL near the southwest corner of the interceptor trench (north to south). Further historic hydrogeologic information is provided in Appendix A from the Non-Discharge Permit Applications submitted in 2001.

Over the years (since the 1980s) the groundwater flow in the shallow aquifer at the site has been observed in three distinct flow patterns: the natural flow pattern prior to corrective action at the site, the modified patterns seen after installation of a groundwater interceptor trench in 1991 (and extraction), and an additional flow pattern observed after installation of an infiltration gallery for re-injection of treated groundwater.

Natural Groundwater Flow (Pre-1991)

Prior to the 1991 installation of the groundwater interceptor trench, groundwater flowed from a high elevation area to the north of the main building to the south, east, and west. The potentiometric surface from February 1, 1990 is presented as Figure 2-2 in Appendix B. As seen in this figure, the majority of groundwater flow occurred in a westerly direction; however, some groundwater movement can be seen towards MW-10 and MW-11. This groundwater flow pattern created a potentiometric head near the northern section of the manufacturing building and led to the first detections of impacted groundwater in the shallow aquifer. At this time according to the site assessment and correction action plan, some contaminant migration occurred offsite to the east.

Groundwater Interceptor Trench and Removal System (1991-Present)

In 1991, a groundwater interceptor trench was installed as corrective action for the collection and treatment of DCA, DCE, and 1,4-dioxane impacted groundwater. This trench can be seen in Figure ES-4 and ES-5 of Appendix C and has had a definite impact on the groundwater flow patterns at the site. According to the groundwater model created with the 1991 CAP and re-calibrated for this CAP modification, the trench conveys groundwater from the west, middle, and east legs of the GIT south along the trench to the two lowest points of the system, pump stations #1 and #2. It is also interesting to note that the trench was designed to collect impacted groundwater, not only onsite, but offsite to the north, east, and south as well. Not only was groundwater from the source areas addressed but any potential past offsite migration could be captured also. The majority of groundwater within a certain distance (approximately 5 years travel time) from the legs of the trench is captured in the underground piping according to the model (CH2M-Hill, 1991) and moves along the trench to the lowest potentiometric point. Eventually discharging to the adjacent unnamed tributary along the western border of the site. This movement of groundwater acts as a hydraulic barrier for impacted groundwater onsite especially when treatment system removal rates are low and upgradient non-impacted groundwater is allowed to move towards the southwest corner of the trench.

Infiltration Gallery (2002-Present)

In 2002, the groundwater treatment system was modified to discharge to an infiltration gallery located to the north of the site's main building. It was thought that the additional water injected into the upgradient aquifer would enhance the circulation of groundwater through aquifer and accelerate the remediation process. The result of this modification was as expected and monitoring showed a significant decrease in 1,4-dioxane concentrations in monitoring well MW-6 from 2002 to 2004 (1300 ug/l to 230 ug/l); however, since 2004 little reduction in concentrations in MW-6 has been documented. Currently, the infiltration gallery has little affect on the shallow aquifer (Figure 3).

Groundwater Flow Summary

Since 1990, groundwater flow in the shallow aquifer has exhibited distinct flow patterns primarily related to the remedial activities occurring at the site at the time of observation. In general, the following can be inferred from the groundwater flow patterns during corrective action at the site:

- Groundwater that prior to corrective action moved offsite, is captured by the trench and diverted and discharge to the unnamed tributary to the west.
- The trench stores and transports groundwater along its length (independent of the natural groundwater flow in the shallow aquifer) with limited removal or hydraulic affect from the extraction system.
- This movement of water along the trench acts a hydraulic barrier for onsite groundwater. Upgradient groundwater preferentially moves along the trench and discharges to the unnamed tributary to the west. Onsite groundwater thus remains onsite (inside the trench).
- The infiltration gallery no longer has a significant affect on groundwater movement at the site.

2.4 Identification of Potential Receptors

According to 15A NCAC 02L .0102, a receptor is defined as "any human, plant, animal, or structure which is, or has the potential to be, adversely effected by the release or migration of contaminants" and 15A NCAC 02L .0106(l)(4) requires "that contaminant migration will not result in any violation of applicable groundwater standards at any existing or foreseeable receptor."

Based on this definition there are no receptors that have the potential to be adversely affected by a release or migration of contaminants within 5-year groundwater travel time downgradient. During assessment activities in 1990, all contiguous properties with an apparent structure / dwelling were connected to the City of Kinston water supply system and any existing water supply wells were abandoned in-place. Currently the City of Kinston provides the water supply for the area. Vapor intrusion is an incomplete pathway since by definition 1,4-dioxane is not considered a volatile (based on its low Henry's Law constant) and there are no occupied structures (other than the plant itself) within 100 feet of the contaminant plume. Based on groundwater travel times (Section 4.3) and the definition of a receptor, no foreseeable receptor exists where groundwater will exceed an applicable groundwater standard. It is apparent from the groundwater model and past potentiometric groundwater surface monitoring that groundwater will only migrate far enough offsite to be captured by the unnamed tributary to the west of the site. In this surface water body, past sampling have not shown detections of 1,4-dioxane above NCAC 2B standards at any sampling point.

3.0 CURRENT CORRECTIVE ACTION (1991-PRESENT)

3.1 Corrective Action Objectives and Cleanup Levels (1991)

The specific corrective action objectives outlined in the 1991 Corrective Action Plan were to:

- Prevent further migration of contaminants within the source area.
- Remove and treat the contaminants in the source area to the established cleanup levels.
- Achieve a timely cleanup.

The original CAP was designed to address groundwater in the surficial aquifer within the source area. The source area is defined to the west by the existing ditch, to the east by the property fence line, and to the south by State Road 1802.

The contaminants addressed in the CAP and by the groundwater treatment system included 1,4-dioxane, DCA, DCE, and iron. Iron was included due to its apparent increased solubility within the groundwater as a result of facility releases and its potential to disrupt the groundwater collection, treatment, and discharge systems. Target cleanup levels were set for each of the four contaminants of concern according to Section 0202 of the North Carolina Administrative Code Title 15A Subchapter 2L – Classifications and Water Quality Standards applicable to the Groundwaters of North Carolina.

Constituent of Concern	Target Cleanup Level
DCE	7 ug/l - water quality standard
DCA	7 ug/l - water quality standard for DCE
1,4-dioxane	150 ug/l - PQL for EPA Method 8015
Iron	500 ug/l - background levels

3.2 Evaluation of Groundwater Treatment Performance

Evaluation of groundwater treatment system performance is based on groundwater monitoring across the site, surface water sampling in the adjacent unnamed tributary, and treatment system performance sampling. The following gives a brief summary of past near term sampling.

3.2.1 Groundwater Data

The monitoring program for the groundwater treatment includes the monitoring of the surficial groundwater. Samples have been collected semi-annually since 2002. Samples are analyzed for DCA; 1,4-dioxane; and DCE. The laboratory analytical method was changed in April 2001 from EPA Method 8015 to EPA Method 8270C for 1,4-dioxane. This method reduced the method detection limit from 150 ug/l to approximately 1.5 ug/l for this parameter.

Surficial groundwater monitoring is used to evaluate the effectiveness of the groundwater collection system. The wells used for monitoring include 14 shallow groundwater monitoring wells, 5 deep monitoring wells, and two surface water locations. Samples were collected quarterly until 2002 and semi-annually, thereafter. For the purposes of corrective action, monitoring primarily focuses on: source area wells MW-3 and MW4A; performance monitoring wells MW-6, MW-7A, MW-10A, and MW-11A; and downgradient wells MW-14A and MW-15. The remaining onsite monitoring wells were installed either to monitor the infiltration gallery or during previous groundwater assessments. Summaries of historical groundwater sampling for COPCs in all wells are presented in Tables 1, 2, and 3. An isoconcentration contour map for 1,4-dioxane (April 2005) is included as Figure 3. Groundwater monitoring well concentration trends for all wells of interest is included as Figures 4 through 12. The following is a summary of the most recent groundwater sampling (since 4/1/2001) at the site for the primary focus wells:

MW-3 and MW-4A (Presumed Source Area)

1,1-Dichloroethene (DCE) – Only two results of analysis has been above NC 2L groundwater standard (7 ug/l) since 4/1/2001. On 4/10/2001 DCE was 9.4 ug/l and on 1/25/2002 DCE was 9.3 ug/l. During the April 2005 sampling event a detection of 1.3 ug/l was reported in MW-3. An overall decrease in concentrations over time for these wells can be seen in Figure 11. Concentrations for this constituent have decreased by an order of magnitude over the last 10 sampling events and have remained at this level since April 2005.

1,1-Dichloroethane (DCA) – All results of analyses have been below NC 2L groundwater standard (70 ug/l) since 4/1/2001. During the April 2005 sampling event a detection of 1.7 ug/l was reported in MW-4A. An overall decrease in concentrations over time for these wells can be seen in Figure 12. Concentrations for this constituent have decreased by four orders of magnitude over the last 12 sampling events and have remained at this level since 1/25/2002.

1,4-Dioxane – All results of analyses have been above the NC 2L groundwater standard (7 ug/l) since 4/1/2001. As evident in Figures 4 and 5 concentrations are approaching asymptotic levels in both of these wells. During the April 2005 sampling event a detection of 67 ug/l and 58 ug/l was reported in MW-3 and MW-4A respectively.

MW-6, MW-7A, MW-10A and MW-11A (Interceptor Trench)

1,1-Dichloroethene (DCE) – All results of analyses have been below NC 2L groundwater standard (7 ug/l) since 4/1/2001 for all wells. During the April 2005 sampling event detections of 5.8 ug/l and 1.1 ug/l was reported in MW-6 and MW-11A respectively. An overall decrease in concentrations over time for these wells can be seen in Figure 11.

1,1-Dichloroethane (DCA) – All results of analyses have been below NC 2L groundwater standard (70 ug/l) since 4/1/2001 for all wells. During the April 2005 sampling event detections of 45 and 6.8 ug/l was reported in MW-6 and MW-11A respectively. An overall decrease in concentrations over time for these wells can be seen in Figure 12. not true

1,4-Dioxane – All results of analyses for MW-6 and MW-7A have been above the NC 2L groundwater standard (7 ug/l) since 4/1/2001. MW-11A, which is located inside the interceptor trench, is currently above the NC 2L standard. MW-10A has been below the NC 2L standard since 7/9/2002. As evident in Figures 6, 7, and 8 concentrations are approaching asymptotic levels in the majority of these wells (except MW-11A). During the April 2005 sampling event detections of 210 ug/l, 27 ug/l, and 13 ug/l were reported in MW-6, MW-7A and MW-11A respectively.

MW-14A and MW-15 (Downgradient)

1,1-Dichloroethene (DCE) – All results of analyses have been below NC 2L groundwater standard (7 ug/l) since 4/1/2001 for both wells. During the April 2005 sampling event a detection 0.93 ug/l was reported in MW-15. An overall decrease in concentrations over time for these wells can be seen in Figure 11.

1,1-Dichloroethane (DCA) – All results of analyses have been below NC 2L groundwater standard (70 ug/l) since 4/1/2001 for all wells. During the April 2005 sampling event a detection of 0.58 ug/l was reported in MW-14A and 5.1 ug/l was reported in MW-15. An overall decrease in concentrations over time for these wells can be seen in Figure 12.

1,4-Dioxane – All results of analyses in MW-15 have been above the NC 2L groundwater standard (7 ug/l) since 4/1/2001. MW-14A has been below the NC 2L standard since 4/6/2004. As evident in Figures 10 and 11 significant concentration reductions have occurred in both of these wells. During the April 2005 sampling event detections of 2.7 ug/l and 34 ug/l were reported in MW-14A and MW-15 respectively.

3.2.2 Surface Water Data

The CAP compliance monitoring for the surface water has included the monitoring of an unnamed tributary on the western border of the site at two locations (SW-11 and SW-24) prior to confluence with Beaverdam Branch, a tributary of the Neuse River. Samples have been collected semi-annually along with the groundwater events at location SW-11. SW-24 was last sampled in April 2001 and has been sampled a total of 5 times since

1999. Samples are analyzed for DCE, DCA, and 1,4-dioxane. Historical surface water sampling is included in Table 4.

The following is a summary of the surface water sampling at the site for the two-downgradient water bodies:

SW-11 (Routinely Sampled)

1,1-Dichloroethene (DCE) – All results of analyses have been below NC 2B surface water standard (340 ug/l) for all samples at all locations along the unnamed tributary.

1,1-Dichloroethane (DCA) – All results of analyses have been below NC 2B surface water standard (3,400 ug/l) for all samples at all locations along the unnamed tributary.

1,4-Dioxane – All results of analyses have been below the NC 2B surface water standard (305 ug/l). During the April 2005 sampling event 1,4-dioxane was present at 11 ug/l. The last 4 sampling events have averaged 12.5 ug/l instream.

A summary of the historical sampling at locations SW-11 and SW-24 is presented in Table 4.

Other Surface Water Sampling Locations of Interest (1,4-dioxane only)

Additional sampling has occurred over the years. The following is a summary of all downstream surface water sampling locations of interest since 1990:

Location	Water Body	Period Sampled	No. of Samples	1,4-Dioxane Average	1,4-Dioxane Maximum
SW-11	Unnamed Tributary	2002-2005	6	13.2 ug/l	21 ug/l
SW-22	Beaverdam Branch	1990	1	< 50 ug/l	< 50 ug/l
SW-23	Beaverdam Branch	1990	1	< 50 ug/l	< 50 ug/l
SW-24	Unnamed Tributary	1990-2001	39	< 150 ug/l	180 ug/l (04/1994)
SW-28	Beaverdam Branch	1990	1	< 50 ug/l	< 50 ug/l
SW-29	Beaverdam Branch	1990	1	< 50 ug/l	< 50 ug/l

The laboratory method for 1,4-dioxane was changed to 8270C in 2002

1,4-Dioxane NC 2B surface water standard is 305 ug/l

All Dichloroethene results have been below the method detection limit (5.0 ug/l)

3.2.3 Treatment System Performance Sampling

Effluent samples from the treatment system are collected to determine whether the cleanup levels are being achieved. Samples have been collected monthly since system startup. Samples are analyzed for DCE, DCA; and 1,4-dioxane. The following summary focuses on data collected since 12/9/2002. This date corresponds to the last significant detection (i.e. greater than 7 ug/l) of 1,4-dioxane in the influent of the treatment system.

1,1-Dichloroethene (DCE)

All influent detections of DCE have been below 3.9 ug/l since 12/9/2002. Approximately two-thirds of influent samples are below the method detection limit (0.33 ug/l) since 12/9/2002. The last detection of DCE at the influent to the treatment system occurred on 10/6/2004 (0.40 ug/l). All effluent concentrations of DCA have been below 0.56 ug/l.

1,1-Dichloroethane (DCA)

All influent detections of DCA have been below 19 ug/l since 12/9/2002. The average concentration since 12/9/2002 is approximately 8.4 ug/l. All effluent concentrations of DCA have been below 1.2 ug/l.

1,4-Dioxane

All influent detections of 1,4-dioxane have been below 2.8 ug/l since 12/9/2002. Approximately 92.5% of influent samples are below the method detection limit (1.5 ug/l) since 12/9/2002. All effluent concentrations of 1,4-dioxane have been below the method detection limit since 12/9/2002.

Influent / effluent performance sampling is summarized below:

Location	Analyte	Period Sampled	No. of Samples	Avg*	Max	Maximum Removed (lbs/day)**
Influent	DCE	2003-2005	27	0.5 ug/l	3.9 ug/l	0.00002
Influent	DCA	2003-2005	27	8.4 ug/l	19 ug/l	0.00037
Influent	1,4-dioxane	2003-2005	27	0.1 ug/l	2.8 ug/l	0.00003
Effluent	DCE	2003-2005	27	0.03 ug/l	0.56 ug/l	N/A
Effluent	DCA	2003-2005	27	0.32 ug/l	1.2 ug/l	N/A
Effluent	1,4-dioxane	2003-2005	27	<1.5 ug/l	<1.5 ug/l	N/A

* For the purposes of averaging, non-detects are assumed zero

** For the purposes of calculation influent non-detects are assumed equal to the detection limit and effluent non-detects are assumed zero (i.e. maximum removal)

Conduit Flow

Treatment system flow has gradually declined over the last year, from 265,240 in May 2004 (6.4 gpm) to 60,500 gallons (2.4 gpm) in December 2004 and 59,300 (4.5 gpm) in April 2005. The average monthly processed water in 2004 and 2005 was approximately 190,000 and 59,000 gallons respectively. It is presumed that the primary reason for this reduction (6.4 to 2.4 gpm) is operational difficulties and solids deposition over time in the trench pipe and filter sock around the pipe. These solids deposits reduce cross sectional area inside the pipe and thus affect the pump station's flow rates / cycle time.

Removal Efficiency

Approximate average removal efficiencies since 12/9/2002 are:

- 1,4-Dioxane – 100% (when detected)
- DCE – 96.6% (when detected)
- DCA – 89.7%

These efficiencies assume effluent concentrations are zero when detected below the method detection limit. Also, negative removal efficiencies were not included in the average calculation.

3.2.4 Groundwater Treatment System Summary

Significant reductions in the 1,4-dioxane concentrations seen in MW-6 (22,000 ug/l to 210 ug/l) and MW-7A (5700 ug/l to 27 ug/l) from 1991 to 2004 indicate that the GIT has realized the intentions of installation per the 1991 CAP. Further reduction of 1,4-dioxane since 2002, according to the groundwater model and influent / effluent sampling cannot be attributable to the extraction and treatment portion of the GIT system. The following can be inferred based on the performance evaluation presented above:

- System hydraulics has been reduced presumably due to solids deposits in the interceptor trench pipe and filter sock around the pipe.
- Influent and effluent concentrations of 1,4-dioxane and DCE are low (typically below detection). Thus there is no mass input into the chemical oxidation treatment system other than DCA.
- Concentrations of COPCs in monitoring wells have been reduced over time and are approaching an asymptotic level.
- The extraction and treatment system is no longer having a material reducing effect on concentrations in the shallow aquifer.

4.0 EVALUATION OF PROPOSED CORRECTIVE ACTION

The following groundwater modeling was performed at the site in support of enhanced monitored natural attenuation. The results presented below confirm that monitored natural attenuation is appropriate at the site and that continued operation of the extraction system is not advantageous to further reductions in mass of COPCs or achieve hydraulic control of the shallow aquifer.

4.1 Past Groundwater Modeling (MODFLOW)

Previous predictive groundwater flow modeling was performed at the site in 1991 for the original CAP and in 2001 to evaluate the impact to existing aquifer conditions attributable to the infiltration of treated groundwater at the site. The computer program Visual MODFLOW was used to model those conditions. Previous modeling is including in Appendix D.

The computer program Visual MODFLOW, created by Waterloo Hydrogeologic Inc. Visual MODFLOW is a numerical model that integrates the commonly used USGS models Modflow, Modpath, and MT3DMS.

The Visual MODFLOW process was initiated by developing a grid of the subject site to create nodes and finite difference blocks (cells) for which specific parameters were assigned to account for variations in site conditions. These parameters included model thickness, horizontal and vertical hydraulic conductivity, specific storage, specific yield, total and effective porosity, recharge and hydraulic boundaries (i.e., existing heads in interceptor trench based on 6 gpm system groundwater extraction rate). With the exception of the hydraulic boundaries, the above listed parameters were adjusted as part of the model calibration process in order to produce model results that matched the values measured in the field (such as the existing potentiometric surface). The estimation of these parameters was maintained within data ranges that would be expected based on the actual site conditions. For example, the hydraulic conductivity values in particular entered in the model are similar to the hydraulic conductivity values previously calculated for the site using actual field data. In this case of hydraulic conductivity data generated for the site during previous site investigations ranged between 0.1 ft/day to 100 ft/day. On review it was apparent that two anomalously high conductivity values were documented to exist at the site at monitoring well MW-7B (90 ft/day) and MW-8 (100 ft/day). The remaining conductivity values were grouped between 0.1 ft/day and 30 ft/day. The anomalously high conductivity values calculated for MW-7B and MW-8 were disregarded as outliers and possibly resultant from incorrect assumptions during the analysis of the recovery data. Specifically, the dewatering of the sand pack surrounding the screened section of the well will initially, under certain circumstances, exhibit an accelerated recovery slope as the sand pack drains into the screen followed by a second recovery slope more typical of flow from the undisturbed aquifer into the well. If the initial slope is incorrectly selected the results will be skewed to be more representative of the hydraulic conductivity of the sand pack material and not the aquifer.

During the calibration of the MODFLOW model hydraulic conductivity and other various parameters input into the model were adjusted within ranges deemed acceptable based on site data to produce model results that matched the actual values measured in the field (such as existing potentiometric surface maps). In respect to hydraulic conductivity, the final values used in the model were between 1 and 12 ft/day.

The range of parameters entered in the model as part of the calibration process were as follows:

Parameter	Assumed Value
Hydraulic Conductivity (horizontal)	1 to 12 ft/day
Hydraulic Conductivity (vertical)	0.1 to 1.2 ft/day
Recharge	7 inches/year
Specific Storage	0.0002
Specific Yield	0.25
Effective/Total Porosity	25%

Once the model was calibrated to produce results similar to actual site conditions, additional hydraulic stresses were added to the model to simulate hydraulic fluxes created by the infiltration gallery. As documented in the Non-Discharge Permit Application (DuPont CRG, 2001), the model was run under steady state conditions for a duration of 7300 days (20 years) assuming a continuous flux of infiltrate at a rate of 6 gpm. Model results indicate that the maximum groundwater mounding would occur directly below the infiltration gallery at an elevation of approximately 28 ft/msl. Particle tracking completed as part of the Modpath component of Visual MODFLOW indicated that groundwater in the immediate vicinity of the infiltration gallery will ultimately discharge into the interceptor trench.

In addition to modeling the hydraulic conditions created by the infiltration gallery, the migration and reduction of existing 1,4-dioxane contaminant concentrations were also evaluated using MT3DMS. Time steps were modeled at 6-month intervals over to course of the model duration (7300 days). As evident in the past modeling in Appendix D, 1,4-dioxane migration and attenuation figures, the hydraulic stresses created by the infiltration gallery ultimately expedite the restoration of groundwater quality at the subject site by increasing the hydraulic gradient and solute velocity.

4.2 Comparison of Past Modeling with Current Groundwater State

Past modeling has predicted capture and movement of groundwater and contaminants rather accurately over the approximate 15 years of trench / extraction system operation. The modeling performed in 2001 estimated the approximate plume attenuation / migration that is currently seen in the actual site conditions. The past modeling however did not intend to model degradation of extraction and re-injection flow rates (which directly affect the upgradient hydraulic head) nor non-detect 1,4-dioxane influent concentrations (which directly affect mass movement) currently seen over the past few years. Current predictive modeling has been performed to more accurately predict the time and direction of contamination movement based on these lower flow rates and in particular without extraction, treatment, and re-injection of groundwater.

4.3 Current Predictive Groundwater Flow Analysis

A groundwater flow analysis was completed at the site to evaluate groundwater flow conditions and contaminant fate and transport during both operational and non-operational extraction conditions of the interceptor trench. To account for the variations in flow conditions, depth to groundwater elevations were measured during periods when the interceptor trench was operational and non-operational.

4.3.1 Non-operational Conditions

Depth to water elevations were collected from all accessible site monitoring wells, interceptor trench access manholes, and from staff gauge locations installed in the drainage ditch / unnamed tributary and lower creek on June 7, 2005. The extraction system had been non-operational for approximately 57 days prior to these measurements. This data was used to generate a potentiometric surface contour map (included as Figure 14) which depicts static conditions at the site in respect to flow interaction between groundwater, surface water, and water in the interceptor trench. As evident on this figure, even during non-operational conditions, the interceptor trench is a significant influence in respect to groundwater flow beneath the site. A comparison of head elevation differences between monitoring wells and trench access manholes indicates that groundwater is entering the trench in areas where the water elevation in the trench is lower than the potentiometric surface and exiting the trench in areas where conditions are reversed. Specifically, groundwater appears to be flowing into the trench in the northeastern / upgradient area of the site and flowing away from the trench in the south southwestern / downgradient area of the site.

4.3.2 Operational Conditions

To account for hydraulic influences created by the operation of the interceptor trench, the system was operated for a period of 48 hours (June 23-24, 2005) during which water level measurements were frequently collected from all accessible trench access manholes. Using the maximum drawdowns measured for each of the trench access manholes the head elevations along the trench were interpolated and their values used to reassess the flow conditions generated for June 7, 2005. A potentiometric surface map depicting the operational interceptor trench and its influence on groundwater conditions is included as Figure 15. As evident on this figure water elevations in the trench are lower than surrounding groundwater indicating flow towards the trench. This flow configuration is more than likely representative of the condition corresponding to the maximum potential effect of the extraction system on the aquifer. This is due to the fact that the system operates by only pumping from pump station PS-1 or PS-2 and not the simultaneously operation of both stations which would be more reflective of the potentiometric surface generated using maximum drawdowns. The intermittent operation of individual pump stations may create transient conditions where water flows into the trench and than away from the trench as pumps turn on and off.

4.3.3 Groundwater Pathline and Travel Time Analysis

The groundwater model GWPATH 4.0 was utilized to evaluate the potential migratory pathlines of contaminants at the site in respect to operating and non-operating trench conditions. GWPATH is a two-dimensional numerical interactive model, which calculates groundwater flow pathlines for a specified duration given the static head elevations, hydraulic conductivity, and soil porosity data. As used in previous predictive flow modeling at the site, an average hydraulic conductivity of 6 ft/day and effective porosity of 25% were input into the GWPATH calculations.

Particle pathline origins were located within 25-foot radii of each of the following monitoring wells at the site: MW-1, MW-2, MW-3, MW-4A, MW-5, MW-6, MW-7A, MW-8, and MW-11. Ten particles were equally dispersed within each of the radial areas surrounding the above listed monitoring wells. GWPATH forward calculated the pathlines for each of the particles over a duration of 5 years using the head elevations generated for both non-operating (Figure 16) and operating (Figure 17) conditions.

Figure 16 depicts the forward particle pathline results for conditions when the interceptor trench extraction system is non-operational. As evident on this figure the mounding conditions created beneath the trench are keeping the pathlines contained within the downgradient portion of the interceptor trench system. Specifically, pathlines originating from impacted monitoring wells MW-6, MW-7A and MW-11 are being forced away from the trench thus being prevented from following natural flow gradients and flowing towards downgradient features such as the creek. Pathlines originating from monitoring wells MW-1 through MW-3 may migrate as far as the upper reaches of the drainage ditch.

Figure 17 depicts the forward particle pathline results for conditions when the interceptor trench extraction system is operational. As evident on this figure the lower head elevations interpolated within the operating interceptor trench are influencing the potential migration of particles around monitoring wells MW-6, MW-7A and MW-11 to flow towards, and into the trench system. However, once in the trench it is possible for the pathlines to exit the trench due to the intermittent operating frequency and low removal flow rates of the individual pumping stations. Since the pumping effect on the aquifer is much less the further away from each pump station, it appears that the drop in head towards the middle interceptor trench leg is just sufficient enough to equalize the potentiometric surface and eliminate the high head mounding observed during the non-operational state thus compromising containment of contaminants to the south. This is depicted by the downgradient pathlines passing through the trench and ultimately migrating to the creek. Even though it is not possible to ascertain if this indeed occurs through fate and transport modeling, this condition is supported empirically by the absence of detectable contaminants in the influent samples collected pre-treatment from the trench under operating conditions as well as the consistent presence of low level contaminants in downgradient monitoring wells MW-14A and MW-15.

4.4 Groundwater Flow Analysis Conclusions

The following conclusions can made about the groundwater extraction operational affects on groundwater at the site:

- It is evident that the existing limitations of the interceptor trench extraction system prevent the operation of the system at a maintained extraction rate sufficient to recover all fluids that enter into the trench. Subsequently, it is possible for impacted groundwater to flow into the trench in one area of the site and exit the trench in another. This situation is less desirable than the proposed enhanced attenuation scenario in that the migration of contaminants is expected towards MW-14A and MW-15 significantly faster than contaminant migration through the aquifer based solely on seepage velocity.
- When the extraction system is non-operational the corresponding head elevations inside the trench (due to the flux of groundwater entering the trench from the upgradient portion of the site) create downgradient mounding conditions which retain impacted groundwater inside the limits of the trench system, thus the trench acts as a hydraulic barrier.
- As evident on both the operating and non-operating extraction system conditions, the potentiometric surface indicates that groundwater in the shallow aquifer beneath the site is towards the unnamed tributary along the western boundary of the site. Groundwater flow beneath the site is not towards other potential offsite receptors located to the east and/or southeast of the site.

5.0 PROPOSED CORRECTIVE ACTION

The remedial goal for the site is to ensure the protection of human health and the environment. The environmental conditions of the site as summarized in the previous sections indicate that this goal is currently being met. To ensure that protection of human health and the environment is maintained in the future, DuPont proposes to implement a corrective action program to confirm that migration of impacted groundwater does not adversely impact potential receptors. Enhanced natural attenuation (groundwater interceptor trench assisted) has been selected as the primary corrective action remedy for the site, with long-term groundwater monitoring.

According the 15A NCAC 02L .0106(l) the director may approve natural attenuation based on the following conditions (at a minimum):

1. that all sources of contamination and free product have been removed or controlled;
2. that the contaminant has the capacity to degrade or attenuate under the site-specific conditions;
3. that the time and direction of contaminant travel can be predicted with reasonable certainty;
4. that contaminant migration will not result in any violation of applicable groundwater standards at any existing or foreseeable receptor;
5. that contaminants have not and will not migrate onto adjacent properties, or that: such properties are served by an existing public water supply system dependent on surface waters or hydraulically isolated groundwater, or the owners of such properties have consented in writing to the request;
6. that, if the contaminant plume is expected to intercept surface waters, the groundwater discharge will not possess contaminant concentrations that would result in violations of standards for surface waters contained in 15A NCAC 2B .0200;
7. that the person making the request will put in place a groundwater monitoring program sufficient to track the degradation and attenuation of contaminants and contaminant by-products within and down gradient of the plume and to detect contaminants and contaminant by-products prior to their reaching any existing or foreseeable receptor at least one year's time of travel upgradient of the receptor and no greater than the distance the groundwater at the contaminated site is predicted to travel in five years;
8. that public notice of the request has been provided in accordance with Rule .0114(b) of this Section; and

The following sections provide analysis of the proposed corrective action in relation to the regulatory requirements above.

5.1 Proposed Corrective Action Remedy

The proposed corrective action remedy for the site consists of enhanced natural attenuation and long-term monitoring of 1,4-dioxane and DCE in the shallow aquifer. In 1991 a groundwater interceptor trench was installed at the site for the purpose of collecting impacted groundwater for removal and treatment. According to treatment system performance monitoring at the site (Section 3.2), concentrations of contaminants (specifically 1,4-dioxane) are no longer at levels that lend to efficient removal and treatment. Therefore, it is proposed that the interceptor trench remain in place and the treatment system shutdown (including the infiltration gallery). As presented in the groundwater modeling in Section 4.0, the trench will hydraulically control groundwater movement along its legs toward pump station #1 at the southwest corner of the trench more efficiently than with removal by the treatment system extraction pumps and infiltration gallery in operation. In addition, enhanced natural attenuation of contaminants is presumably occurring through mixing in an interceptor trench induced high groundwater mounding zone beneath the interceptor trench near pump station #1 and through the discharge of groundwater to the surface water features at the site (below NC 2B surface water standards).

5.1.1 Sources of Contamination

As described in Section 2.2, all sources of 1,4-dioxane and DCE were removed during site assessment and previous corrective action activities. Further support of removal of sources of contamination is apparent in the concentration trends in routinely monitored groundwater wells across the site. No free product has ever been detected at the site in any well. Higher solubilities of 1,4-dioxane and DCE lend to dissolved contaminant plumes as opposed to the existence of free phase product.

5.1.2 Attenuation of Contaminants

Attenuation of 1,4-dioxane has been documented during routine groundwater and surface water sampling across the site via the interceptor trench induced mixing zone near pump station #1. Groundwater concentrations of 1,4-dioxane in all monitored wells have seen reductions since 2001, with little removed by the pump and treat system. This has not resulted in a significant increase in surface water concentrations nor a movement of impact offsite. In addition, as groundwater discharges to surface water in the unnamed tributary, it is presumed that the mixing of groundwater with surface water enhances natural attenuation and results in metered reductions of COPCs onsite.

5.1.3 Contaminant Migration and Receptors

Contaminant migration does not occur offsite above NC 2L groundwater standards. The flow and direction of groundwater can be reasonable predicted to discharge into the unnamed tributary to the west of the plant due to the conveyance of water through the GIT to the southwest corner. This conveyance results in an equipotential area between MW-6 and MW-7A (and variably across the middle leg of the interceptor trench) that discharges to the unnamed tributary to the west or is recycled via the middle and eastern interceptor trench legs back to the southwest. Some groundwater escapes across the southern connector of the interceptor trench however the potentiometric surface is to the southwest in this area eventually discharging into either the unnamed tributary to the west. Both surface water and groundwater concentrations of COPCs are below applicable NC 2B standards.

As discussed in Section 2.4, no downgradient receptors have been identified that have the potential to exceed NC 2L standards within 5 years groundwater travel time downgradient from the source area or 1 year upgradient from any potential receptor. Travel time of groundwater predicted by the groundwater model can be seen in Figure 16. All adjacent properties to the site were connected to the local water system during site assessment and corrective action activities from 1987 to 1991. Currently the City of Kinston provides the water supply for the area. In addition, the only adjacent property without a structure / dwelling lies to the north upgradient. Downgradient properties are consistent with single family dwellings and are zoned rural or industrial. No dwellings with basements were identified in a Lenoir County, NC property record search (2004).

5.1.4 Surface Waters

The groundwater plume (SW-11) has impacted surface waters bordering the site; however, no result has exceeded NC 2B standards during any sampling event. According to the Neuse River Foundation there are no drinking water intakes immediately downstream of the site; therefore, surface water is classified Class C - general use all waters of the State. Groundwater concentrations since 2002 have documented reductions in all monitoring wells for 1,4-dioxane, with little removal by the pump and treat system, it can be presumed that the highest surface water concentrations have already been recorded by past sampling given standard statistical variation. In addition, all groundwater concentrations of 1,4-dioxane in routinely monitored groundwater wells are currently (April 2005) below the NC 2B surface water standard.

5.1.5 Compliance Monitoring and Reporting

Corrective action monitoring is necessary to:

- ❑ Demonstrate that the remedy is performing to expectations;
- ❑ Detect changes in environmental conditions (e.g., hydrogeologic, geochemical, or other changes) that may reduce the efficacy of the remedy, and;
- ❑ Verify no unacceptable impacts to downgradient receptors.

The proposed monitoring plan is consistent with past monitoring at the site. The major differences in past and proposed monitoring stem from the need to no longer monitor effects of the infiltration gallery and to shift monitoring focus to the surface water features to the south and west. Therefore the following changes are proposed to the current monitoring plan at the site:

Continued Routine Groundwater Monitoring

The monitoring program will include an adjusted monitoring schedule (quarterly) and will include sampling of the following 9 monitoring well locations (Figure 13): MW-1,

MW-3, MW-4A, MW-6, MW-7A, MW-10A, MW-11A, MW-14A and MW-15. 9
Samples will be analyzed for 1,4-dioxane and DCE until such time that concentrations are below the method detection limit in its respectively well for at least four consecutive monitoring events (minimum quarterly sampling). Any detection above the NC 2L groundwater standard for either analyte during this period will justify continued monitoring of the respective well and associated downgradient wells.

The monitoring program will also consist of the five 50-foot deep monitoring wells (4B, 7B, 10B, 11B, and14B) that monitor the upper portion of the Peedee aquifer. These wells 5
are consistently below the method detection limit for 1,4-dioxane; however, will continue to be monitored until such time that adjacent shallow wells associated with each individual well is no longer monitored per the plan above.

Sampling for 1,4-dioxane and DCE will be analyzed according to EPA Method 8270C and EPA Method 8260B respectively. In addition, the following field parameters will also be collected: pH, temperature, specific conductance, turbidity, oxidation / reduction potential, and dissolved oxygen.

Water level monitoring will be conducted at each sampled monitoring well location prior to sampling to determine groundwater flow direction. Water level measurements will also be taken in all monitoring wells and trench manholes (MH-D2, MH-D3, MH-C1, MH-C3, MH-B2, MH-B3, PS-1, and PS-2) on a semi-annual basis to detect changes to groundwater potentiometric surface that may affect enhanced natural attenuation at the site.

Additional Monitoring

Due to the surface water bodies to the west and south, the contaminant plume has limited chance to migrate through groundwater in these directions. As the predictive groundwater modeling indicates, groundwater in the eastern portion of the site will follow the predominant groundwater flow to the west and the eastern leg of the trench will convey additional groundwater along the eastern site border to the southwest corner of the GIT and into the unnamed tributary.

Currently MW-8 is used to monitor the northern upgradient portion of the groundwater plume (based on is location north of the infiltration gallery); however, since the infiltration gallery will be shutdown, monitoring in the well will be limited to groundwater elevation measurements only. Monitoring in well MW-9 will resume due to its location near the eastern leg of the groundwater interceptor trench. MW-9 will be added to the routine groundwater-sampling program at the site. MW-12A will also be added to ensure that the unnamed tributary to the west captures all contaminants in the groundwater from the site.

Also shown by the groundwater model, some groundwater does move across the trench to the south near MW-6 towards MW-15. In the past, this portion of the plume has been delineated by surface water samples SW-23 and SW-24, which have not indicated 1,4-dioxane levels above the detection limit since 1996. To further track any potential movement of the groundwater plume in this area of the site an additional monitoring well will be installed further south of MW-15. This new well can be seen on Figure 13.

Surface Water Monitoring

The only potential offsite impact of concern is the surface water bodies to the west and south of the facility (unnamed tributary and Beaverdam Branch respectively). Currently only SW-11 is monitored on a regular basis (with the semi-annual groundwater monitoring); however, more locations have been monitored since 1990 (see Section 3.2.2). All results of analysis have been below NC 2B surface water standards. In addition, currently all groundwater concentrations from routinely monitored wells are below the NC 2B surface water standard for 1,4-dioxane.

Expanded surface water sampling will be conducted on a semi-annual basis and will include sampling points SW-9, SW-11, SW-24, and SW-29. These locations are consistently below the NC 2B standard for 1,4-dioxane; however, will continue to be monitored until such time that groundwater monitoring wells upgradient are no longer monitored per the groundwater monitoring plan above. These locations can be seen on Figure 13. Sampling for 1,4-dioxane and DCE will be analyzed according to EPA Method 8270C and EPA Method 8260B respectively. In addition, the following field parameters will also be collected: pH, temperature, specific conductance, turbidity, oxidation / reduction potential, and dissolved oxygen.

Reporting

Monitoring reports will be prepared on a semi-annual basis for review by NCDENR describing the results of the corrective action-monitoring program. The report will include the following information:

- Procedures and methods of monitoring;
- Analytical data generated from groundwater / surface water sampling; and
- A map of the facility denoting sampling locations.

Data summaries will be tabulated in the report text and accompanied by applicable statistical analyses. In addition, any condition that occurred during any sampling event or laboratory analysis that may influence the results will be discussed, as will deviations from the approved final CAP. Graphical displays such as cross-sections, potentiometric contour maps, and isoconcentration contours will be included as necessary.

5.1.6 Permit Requirements

Natural attenuation is not subject to permit requirements by the NCDENR. There are no permit requirements for this remedial action. The active Non-Discharge Permit for discharge into the infiltration gallery will remain active for at least one-year post implementation of this corrective action.

5.1.7 Public Notification

Public notice of the request for corrective action by natural processes of degradation and attenuation as required by 15A NCAC 2L .0114(b) will be performed upon submittal of this report. An example notification letter is attached as Appendix E for reference.

A list of the names and addresses of individuals notified is provided below:

Name	Address	Title/ Reason for Notification
Joey V. Huff	201 North Mclewean P.O. Box 3385 Kinston, NC 28502	Health Director
Mike Jarman	130 South Queen Street P.O. Box 3289 Kinston, NC 28502	County Manger, Chief administrative officer of the political jurisdiction
James Proctor	UNIFI Kinston LLC 4695 Highway 11 North Grifton, NC 28502	Current owner of former DuPont property.
Margie L Grant William R Smith	4648 Braxton Rd Grifton, NC 28530	Contiguous landowner
Thomas A Taylor Tina J Taylor	4595 Braxton Rd Grifton, NC 28530	Contiguous landowner
William B Corbett Mary R Corbett	4571 Braxton Rd Grifton, NC 28530	Contiguous landowner
Robert R Brooks II Marjorie Brooks	4659 Braxton Rd Grifton, NC 28530	Contiguous landowner
Nalphus B Johnson Jr Linda J Fulcher	4897 Braxton Rd Grifton, NC 28530	Contiguous landowner
Agnes Canady Catherine Parker	1410 Mulberry St Goldsboro, NC 27530	Contiguous landowner

5.2 Schedule for Implementation

Quarterly groundwater monitoring is proposed. Progress reports, as described in section 5.1.5, will be submitted to NCDENR on a semi-annual basis. The proposed corrective action remedy for the site will be implemented after approval by NCDENR of this CAP modification.

6.0 REFERENCES

DuPont Corporate Remediation Group. June 28, 2001. Non-Discharge Permit Application. DuPont Kentec, Kinston, NC.

CH2M-Hill. July 11, 1991. Corrective Action Plan. E.I. DuPont deNemours, Kentec, Kinston, NC.

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TABLES

Table 1
Summary of Groundwater Analytical Results for 1,1-Dichloroethene
Former DuPont Kentec Plant

SAMPLE	DATE	ANALYTE	RsltPost	NC 2L Standard	UNITS	Above Reg
MW-1	4/6/2005	1,1-DICHLOROETHENE	<0.43	7	ug/l	NO
MW-1	10/14/2004	1,1-DICHLOROETHENE	<0.13	7	ug/l	NO
MW-1	4/7/2004	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-1	10/23/2003	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-1	4/16/2003	1,1-DICHLOROETHENE	0.69 J	7	ug/l	NO
MW-1	7/8/2002	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-1	1/24/2002	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-1	4/10/2001	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-1	4/13/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-1	1/11/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-1	10/26/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-1	7/14/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-1	4/13/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-3	4/7/2005	1,1-DICHLOROETHENE	1.3	7	ug/l	NO
MW-3	10/14/2004	1,1-DICHLOROETHENE	1.7	7	ug/l	NO
MW-3	4/7/2004	1,1-DICHLOROETHENE	0.56 J	7	ug/l	NO
MW-3	10/23/2003	1,1-DICHLOROETHENE	2.2	7	ug/l	NO
MW-3	4/16/2003	1,1-DICHLOROETHENE	2.7	7	ug/l	NO
MW-3	7/8/2002	1,1-DICHLOROETHENE	1.9	7	ug/l	NO
MW-3	1/25/2002	1,1-DICHLOROETHENE	9.4	7	ug/l	YES
MW-3	4/10/2001	1,1-DICHLOROETHENE	9.3	7	ug/l	YES
MW-3	7/14/1999	1,1-DICHLOROETHENE	11	7	ug/l	YES
MW-3	4/13/1999	1,1-DICHLOROETHENE	14	7	ug/l	YES
MW-4A	4/6/2005	1,1-DICHLOROETHENE	<0.43	7	ug/l	NO
MW-4A	10/14/2004	1,1-DICHLOROETHENE	0.46 J	7	ug/l	NO
MW-4A	4/7/2004	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-4A	10/23/2003	1,1-DICHLOROETHENE	0.38 J	7	ug/l	NO
MW-4A	4/16/2003	1,1-DICHLOROETHENE	2.3	7	ug/l	NO
MW-4A	7/9/2002	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-4A	1/25/2002	1,1-DICHLOROETHENE	0.51 J	7	ug/l	NO
MW-4A	4/10/2001	1,1-DICHLOROETHENE	<10	7	ug/l	NO
MW-4A	4/13/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-4A	1/11/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-4A	10/26/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-4A	7/14/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-4A	4/13/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-4B	4/7/2005	1,1-DICHLOROETHENE	<0.43	7	ug/l	NO
MW-4B	10/14/2004	1,1-DICHLOROETHENE	<0.13	7	ug/l	NO
MW-4B	4/7/2004	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-4B	10/23/2003	1,1-DICHLOROETHENE	0.93 J	7	ug/l	NO
MW-4B	4/16/2003	1,1-DICHLOROETHENE	3.5	7	ug/l	NO
MW-4B	7/9/2002	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-4B	1/24/2002	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-4B	4/10/2001	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-4B	4/13/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-4B	1/11/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-4B	10/26/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-4B	7/14/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-4B	4/13/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO

Table 1
Summary of Groundwater Analytical Results for 1,1-Dichloroethene
Former DuPont Kentec Plant

SAMPLE	DATE	ANALYTE	RsltPost	NC 2L Standard	UNITS	Above Reg
MW-6	4/7/2005	1,1-DICHLOROETHENE	5.7	7	ug/l	NO
MW-6	10/14/2004	1,1-DICHLOROETHENE	5.1	7	ug/l	NO
MW-6	4/7/2004	1,1-DICHLOROETHENE	5.2	7	ug/l	NO
MW-6	10/23/2003	1,1-DICHLOROETHENE	5.1	7	ug/l	NO
MW-6	4/17/2003	1,1-DICHLOROETHENE	<1.0	7	ug/l	NO
MW-6	7/8/2002	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-6	1/24/2002	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-6	4/10/2001	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-6	4/13/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-6	1/11/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-6	10/26/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-6	7/14/1999	1,1-DICHLOROETHENE	<20	7	ug/l	hi DL
MW-6	4/13/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-7A	4/6/2005	1,1-DICHLOROETHENE	<0.43	7	ug/l	NO
MW-7A	10/14/2004	1,1-DICHLOROETHENE	<0.13	7	ug/l	NO
MW-7A	4/7/2004	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-7A	10/23/2003	1,1-DICHLOROETHENE	0.63 J	7	ug/l	NO
MW-7A	4/17/2003	1,1-DICHLOROETHENE	<1.0	7	ug/l	NO
MW-7A	7/8/2002	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-7A	1/24/2002	1,1-DICHLOROETHENE	0.37 J	7	ug/l	NO
MW-7A	4/10/2001	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-7A	4/13/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-7A	1/11/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-7A	10/27/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-7A	10/27/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-7A	7/14/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-7A	4/13/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-7B	4/6/2005	1,1-DICHLOROETHENE	<0.43	7	ug/l	NO
MW-7B	10/14/2004	1,1-DICHLOROETHENE	<0.13	7	ug/l	NO
MW-7B	4/7/2004	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-7B	10/23/2003	1,1-DICHLOROETHENE	<0.33 UJ	7	ug/l	NO
MW-7B	4/17/2003	1,1-DICHLOROETHENE	<1.0	7	ug/l	NO
MW-7B	7/8/2002	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-7B	1/24/2002	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-7B	4/10/2001	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-7B	4/13/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-7B	1/11/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-7B	10/27/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-7B	7/14/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-7B	4/13/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO

Table 1
Summary of Groundwater Analytical Results for 1,1-Dichloroethene
Former DuPont Kentec Plant

SAMPLE	DATE	ANALYTE	RsltPost	NC 2L Standard	UNITS	Above Reg
MW-8	4/6/2005	1,1-DICHLOROETHENE	<0.43	7	ug/l	NO
MW-8	10/14/2004	1,1-DICHLOROETHENE	<0.13	7	ug/l	NO
MW-8	4/7/2004	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-8	10/23/2003	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-8	4/16/2003	1,1-DICHLOROETHENE	<1.0	7	ug/l	NO
MW-8	7/9/2002	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-8	1/25/2002	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-8	4/10/2001	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-8	4/13/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-8	1/11/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-8	10/26/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-8	7/14/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-8	4/13/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-9	4/10/2001	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-9	4/13/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-9	1/11/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-9	10/26/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-9	7/14/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-9	4/13/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-10A	4/7/2005	1,1-DICHLOROETHENE	<0.43	7	ug/l	NO
MW-10A	10/14/2004	1,1-DICHLOROETHENE	<0.13	7	ug/l	NO
MW-10A	4/6/2004	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-10A	10/22/2003	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-10A	4/16/2003	1,1-DICHLOROETHENE	0.65 J	7	ug/l	NO
MW-10A	7/9/2002	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-10A	1/24/2002	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-10A	4/10/2001	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-10A	4/13/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-10A	1/11/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-10A	10/26/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-10A	7/14/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-10A	4/13/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-10B	4/10/2001	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-10B	4/13/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-10B	1/11/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-10B	10/26/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-10B	7/14/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-10B	4/13/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO

Table 1
Summary of Groundwater Analytical Results for 1,1-Dichloroethene
Former DuPont Kentec Plant

SAMPLE	DATE	ANALYTE	RsltPost	NC 2L Standard	UNITS	Above Reg
MW-11A	4/6/2005	1,1-DICHLOROETHENE	1.1	7	ug/l	NO
MW-11A	10/14/2004	1,1-DICHLOROETHENE	0.44 J	7	ug/l	NO
MW-11A	4/6/2004	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-11A	10/22/2003	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-11A	4/16/2003	1,1-DICHLOROETHENE	<1.0	7	ug/l	NO
MW-11A	7/9/2002	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-11A	1/24/2002	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-11A	4/10/2001	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-11A	4/13/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-11A	1/12/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-11A	10/27/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-11A	7/14/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-11A	4/13/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-11B	4/10/2001	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-11B	4/13/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-11B	1/12/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-11B	10/27/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-11B	7/14/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-11B	4/13/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-12	4/10/2001	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-12	4/13/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-12	1/11/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-12	10/26/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-12	7/14/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-12	4/13/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-14A	4/7/2005	1,1-DICHLOROETHENE	<0.43	7	ug/l	NO
MW-14A	10/14/2004	1,1-DICHLOROETHENE	<0.13	7	ug/l	NO
MW-14A	4/6/2004	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-14A	10/22/2003	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-14A	4/17/2003	1,1-DICHLOROETHENE	<1.0	7	ug/l	NO
MW-14A	7/8/2002	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-14A	1/24/2002	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-14A	4/10/2001	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-14A	4/13/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-14A	1/12/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-14A	10/27/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-14A	7/14/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-14A	4/13/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO

Table 1
Summary of Groundwater Analytical Results for 1,1-Dichloroethene
Former DuPont Kentec Plant

SAMPLE	DATE	ANALYTE	RsltPost	NC 2L Standard	UNITS	Above Reg
MW-14B	4/7/2005	1,1-DICHLOROETHENE	<0.43	7	ug/l	NO
MW-14B	10/14/2004	1,1-DICHLOROETHENE	<0.13	7	ug/l	NO
MW-14B	4/6/2004	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-14B	10/22/2003	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-14B	4/17/2003	1,1-DICHLOROETHENE	1.6	7	ug/l	NO
MW-14B	7/8/2002	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-14B	1/24/2002	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-14B	4/10/2001	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-14B	4/13/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-14B	1/12/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-14B	10/27/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-14B	7/14/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-14B	4/13/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-15	4/7/2005	1,1-DICHLOROETHENE	0.93 J	7	ug/l	NO
MW-15	10/14/2004	1,1-DICHLOROETHENE	1.2	7	ug/l	NO
MW-15	4/6/2004	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-15	10/22/2003	1,1-DICHLOROETHENE	0.52 J	7	ug/l	NO
MW-15	4/17/2003	1,1-DICHLOROETHENE	0.39 J	7	ug/l	NO
MW-15	7/8/2002	1,1-DICHLOROETHENE	0.36 J	7	ug/l	NO
MW-15	1/24/2002	1,1-DICHLOROETHENE	<0.33	7	ug/l	NO
MW-15	4/10/2001	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-15	4/13/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-15	1/12/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-15	10/27/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-15	7/14/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-15	4/13/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-16	4/10/2001	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-16	4/13/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-16	1/12/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-16	10/27/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-16	7/14/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-16	4/13/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-18	4/10/2001	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-18	4/14/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-18	1/12/2000	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-18	10/26/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO
MW-18	7/14/1999	1,1-DICHLOROETHENE	<5.0	7	ug/l	NO

NOTE:

hi DL = High detection limit cannot be used for direct comparison to standard
"<" = Non-detect at stated reporting limit
J = Detected below the practical quantation limit (PQL) and therefore is considered an estimate
D = Dilution

Table 2
Summary of Groundwater Analytical Results for 1,1-Dichloroethane
Former DuPont Kentec Plant

SAMPLE	DATE	ANALYTE	RsltPost	NC 2L Standard	UNITS	Above Reg
MW-1	4/7/2005	1,1-DICHLOROETHANE	<0.37	70	ug/l	NO
MW-1	10/14/2004	1,1-DICHLOROETHANE	<0.057 UJ	70	ug/l	NO
MW-1	4/7/2004	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-1	10/23/2003	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-1	4/16/2003	1,1-DICHLOROETHANE	<1.0	70	ug/l	NO
MW-1	7/8/2002	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-1	1/24/2002	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-1	4/10/2001	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-1	4/13/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-1	1/11/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-1	10/26/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-1	7/14/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-1	4/13/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-1	1/1/1990	1,1-DICHLOROETHANE	4.0 J	70	ug/l	NO
MW-1	6/1/1988	1,1-DICHLOROETHANE	5	70	ug/l	NO
MW-1	5/1/1987	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-3	4/7/2005	1,1-DICHLOROETHANE	<0.37	70	ug/l	NO
MW-3	10/14/2004	1,1-DICHLOROETHANE	<0.057	70	ug/l	NO
MW-3	4/7/2004	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-3	10/23/2003	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-3	4/16/2003	1,1-DICHLOROETHANE	<1.0	70	ug/l	NO
MW-3	7/8/2002	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-3	1/25/2002	1,1-DICHLOROETHANE	25	70	ug/l	NO
MW-3	4/10/2001	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-3	4/14/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-3	1/11/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-3	10/26/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-3	7/14/1999	1,1-DICHLOROETHANE	41	70	ug/l	NO
MW-3	4/13/1999	1,1-DICHLOROETHANE	5.6	70	ug/l	NO
MW-3	1/1/1990	1,1-DICHLOROETHANE	73	70	ug/l	YES
MW-4A	4/7/2005	1,1-DICHLOROETHANE	1.7	70	ug/l	NO
MW-4A	10/14/2004	1,1-DICHLOROETHANE	1	70	ug/l	NO
MW-4A	4/7/2004	1,1-DICHLOROETHANE	0.56 J	70	ug/l	NO
MW-4A	10/23/2003	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-4A	4/16/2003	1,1-DICHLOROETHANE	<1.0	70	ug/l	NO
MW-4A	7/9/2002	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-4A	1/25/2002	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-4A	4/10/2001	1,1-DICHLOROETHANE	<10	70	ug/l	NO
MW-4A	4/13/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-4A	1/11/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-4A	10/26/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-4A	7/14/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-4A	4/13/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-4A	1/1/1990	1,1-DICHLOROETHANE	800	70	ug/l	YES
MW-4A	6/1/1988	1,1-DICHLOROETHANE	900	70	ug/l	YES
MW-4A	5/1/1987	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO

Table 2
Summary of Groundwater Analytical Results for 1,1-Dichloroethane
Former DuPont Kentec Plant

SAMPLE	DATE	ANALYTE	RsltPost	NC 2L Standard	UNITS	Above Reg
MW-4B	4/7/2005	1,1-DICHLOROETHANE	<0.37	70	ug/l	NO
MW-4B	10/14/2004	1,1-DICHLOROETHANE	<0.057	70	ug/l	NO
MW-4B	4/7/2004	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-4B	10/23/2003	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-4B	4/16/2003	1,1-DICHLOROETHANE	<1.0	70	ug/l	NO
MW-4B	7/9/2002	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-4B	1/24/2002	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-4B	4/10/2001	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-4B	4/13/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-4B	1/11/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-4B	10/26/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-4B	7/14/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-4B	4/13/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-6	4/7/2005	1,1-DICHLOROETHANE	45	70	ug/l	NO
MW-6	10/14/2004	1,1-DICHLOROETHANE	29	70	ug/l	NO
MW-6	4/7/2004	1,1-DICHLOROETHANE	49	70	ug/l	NO
MW-6	10/23/2003	1,1-DICHLOROETHANE	51	70	ug/l	NO
MW-6	4/17/2003	1,1-DICHLOROETHANE	3.2	70	ug/l	NO
MW-6	7/8/2002	1,1-DICHLOROETHANE	0.95 J	70	ug/l	NO
MW-6	1/24/2002	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-6	4/10/2001	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-6	4/13/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-6	1/11/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-6	10/26/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-6	7/14/1999	1,1-DICHLOROETHANE	<20	70	ug/l	NO
MW-6	4/13/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-7A	4/6/2005	1,1-DICHLOROETHANE	<0.37	70	ug/l	NO
MW-7A	10/14/2004	1,1-DICHLOROETHANE	<0.057	70	ug/l	NO
MW-7A	4/7/2004	1,1-DICHLOROETHANE	0.65 J	70	ug/l	NO
MW-7A	10/23/2003	1,1-DICHLOROETHANE	0.51 J	70	ug/l	NO
MW-7A	4/17/2003	1,1-DICHLOROETHANE	<1.0	70	ug/l	NO
MW-7A	7/8/2002	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-7A	1/24/2002	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-7A	4/10/2001	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-7A	4/13/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-7A	1/11/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-7A	10/27/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-7A	10/27/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-7A	7/14/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-7A	4/13/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-7A	1/1/1990	1,1-DICHLOROETHANE	10	70	ug/l	NO
MW-7A	6/1/1988	1,1-DICHLOROETHANE	9	70	ug/l	NO

Table 2
Summary of Groundwater Analytical Results for 1,1-Dichloroethane
Former DuPont Kentec Plant

SAMPLE	DATE	ANALYTE	RsltPost	NC 2L Standard	UNITS	Above Reg
MW-7B	4/6/2005	1,1-DICHLOROETHANE	<0.37	70	ug/l	NO
MW-7B	10/14/2004	1,1-DICHLOROETHANE	<0.057	70	ug/l	NO
MW-7B	4/7/2004	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-7B	10/23/2003	1,1-DICHLOROETHANE	<0.43 UJ	70	ug/l	NO
MW-7B	4/17/2003	1,1-DICHLOROETHANE	<1.0	70	ug/l	NO
MW-7B	7/8/2002	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-7B	1/24/2002	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-7B	4/10/2001	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-7B	4/13/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-7B	1/11/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-7B	10/27/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-7B	7/14/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-7B	4/13/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-8	4/6/2005	1,1-DICHLOROETHANE	<0.37	70	ug/l	NO
MW-8	10/14/2004	1,1-DICHLOROETHANE	<0.057	70	ug/l	NO
MW-8	4/7/2004	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-8	10/23/2003	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-8	4/16/2003	1,1-DICHLOROETHANE	<1.0	70	ug/l	NO
MW-8	7/9/2002	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-8	1/25/2002	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-8	4/10/2001	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-8	4/13/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-8	1/11/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-8	10/26/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-8	7/14/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-8	4/13/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-8	1/1/1990	1,1-DICHLOROETHANE	3 J	70	ug/l	NO
MW-8	6/1/1988	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-9	4/10/2001	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-9	4/13/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-9	1/11/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-9	10/26/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-9	7/14/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-9	4/13/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-10A	4/7/2005	1,1-DICHLOROETHANE	<0.37	70	ug/l	NO
MW-10A	10/14/2004	1,1-DICHLOROETHANE	<0.057	70	ug/l	NO
MW-10A	4/6/2004	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-10A	10/22/2003	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-10A	4/16/2003	1,1-DICHLOROETHANE	<1.0	70	ug/l	NO
MW-10A	7/9/2002	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-10A	1/24/2002	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-10A	4/10/2001	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-10A	4/13/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-10A	1/11/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-10A	10/26/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-10A	7/14/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-10A	4/13/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO

Table 2
Summary of Groundwater Analytical Results for 1,1-Dichloroethane
Former DuPont Kentec Plant

SAMPLE	DATE	ANALYTE	RsltPost	NC 2L Standard	UNITS	Above Reg
MW-10B	4/10/2001	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-10B	4/13/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-10B	1/11/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-10B	10/26/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-10B	7/14/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-10B	4/13/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-11A	4/6/2005	1,1-DICHLOROETHANE	6.8	70	ug/l	NO
MW-11A	10/14/2004	1,1-DICHLOROETHANE	1.4	70	ug/l	NO
MW-11A	4/6/2004	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-11A	10/22/2003	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-11A	4/16/2003	1,1-DICHLOROETHANE	<1.0	70	ug/l	NO
MW-11A	7/9/2002	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-11A	1/24/2002	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-11A	4/10/2001	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-11A	4/13/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-11A	1/12/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-11A	10/27/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-11A	7/14/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-11A	4/13/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-11B	4/10/2001	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-11B	4/13/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-11B	1/12/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-11B	10/27/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-11B	7/14/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-11B	4/13/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-12	4/10/2001	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-12	4/13/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-12	1/11/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-12	10/26/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-12	7/14/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-12	4/13/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-14A	4/7/2005	1,1-DICHLOROETHANE	0.58 J	70	ug/l	NO
MW-14A	10/14/2004	1,1-DICHLOROETHANE	0.62 J	70	ug/l	NO
MW-14A	4/6/2004	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-14A	10/22/2003	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-14A	4/17/2003	1,1-DICHLOROETHANE	<1.0	70	ug/l	NO
MW-14A	7/8/2002	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-14A	1/24/2002	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-14A	4/10/2001	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-14A	4/13/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-14A	1/12/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-14A	10/27/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-14A	7/14/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-14A	4/13/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-14A	1/1/1990	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO

Table 2
Summary of Groundwater Analytical Results for 1,1-Dichloroethane
Former DuPont Kentec Plant

SAMPLE	DATE	ANALYTE	RsltPost	NC 2L Standard	UNITS	Above Reg
MW-14B	4/7/2005	1,1-DICHLOROETHANE	<0.37	70	ug/l	NO
MW-14B	10/14/2004	1,1-DICHLOROETHANE	<0.057	70	ug/l	NO
MW-14B	4/6/2004	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-14B	10/22/2003	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-14B	4/17/2003	1,1-DICHLOROETHANE	<1.0	70	ug/l	NO
MW-14B	7/8/2002	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-14B	1/24/2002	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-14B	4/10/2001	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-14B	4/13/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-14B	1/12/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-14B	10/27/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-14B	7/14/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-14B	4/13/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-15	4/7/2005	1,1-DICHLOROETHANE	5.1	70	ug/l	NO
MW-15	10/14/2004	1,1-DICHLOROETHANE	2.1	70	ug/l	NO
MW-15	4/6/2004	1,1-DICHLOROETHANE	0.77 J	70	ug/l	NO
MW-15	10/22/2003	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-15	4/17/2003	1,1-DICHLOROETHANE	<1.0	70	ug/l	NO
MW-15	7/8/2002	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-15	1/24/2002	1,1-DICHLOROETHANE	<0.43	70	ug/l	NO
MW-15	4/10/2001	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-15	4/13/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-15	1/12/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-15	10/27/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-15	7/14/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-15	4/13/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-16	4/10/2001	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-16	4/13/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-16	1/12/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-16	10/27/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-16	7/14/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-16	4/13/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-18	4/10/2001	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-18	4/14/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-18	1/12/2000	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-18	10/26/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO
MW-18	7/14/1999	1,1-DICHLOROETHANE	<5.0	70	ug/l	NO

NOTE:

hi DL = High detection limit cannot be used for direct comparison to standard
"<" = Non-detect at stated reporting limit
J = Detected below the practical quantation limit (PQL) and therefore is considered an estimate
D = Dilution

Table 3
Summary of Groundwater Analytical Results for 1,4-Dioxane
Former DuPont Kentec Plant

SAMPLE	DATE	ANALYTE	RsltPost	NC 2L Standard	UNITS	Above Reg
MW-1	4/6/2005	1,4-DIOXANE	62	7	ug/l	YES
MW-1	10/14/2004	1,4-DIOXANE	44	7	ug/l	YES
MW-1	4/7/2004	1,4-DIOXANE	25	7	ug/l	YES
MW-1	10/23/2003	1,4-DIOXANE	32	7	ug/l	YES
MW-1	4/16/2003	1,4-DIOXANE	21	7	ug/l	YES
MW-1	7/8/2002	1,4-DIOXANE	83	7	ug/l	YES
MW-1	1/24/2002	1,4-DIOXANE	30	7	ug/l	YES
MW-1	4/10/2001	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-1	4/10/2001	1,4-DIOXANE	36	7	ug/l	YES
MW-1	4/13/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-1	1/11/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-1	10/26/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-1	7/14/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-1	4/13/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-1	1/1/1990	1,4-DIOXANE	1200	7	ug/l	YES
MW-3	4/7/2005	1,4-DIOXANE	67	7	ug/l	YES
MW-3	10/14/2004	1,4-DIOXANE	44	7	ug/l	YES
MW-3	4/7/2004	1,4-DIOXANE	47	7	ug/l	YES
MW-3	10/23/2003	1,4-DIOXANE	58	7	ug/l	YES
MW-3	4/16/2003	1,4-DIOXANE	120	7	ug/l	YES
MW-3	7/8/2002	1,4-DIOXANE	60	7	ug/l	YES
MW-3	1/25/2002	1,4-DIOXANE	100	7	ug/l	YES
MW-3	4/10/2001	1,4-DIOXANE	190	7	ug/l	YES
MW-3	4/14/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-3	1/11/2000	1,4-DIOXANE	290	7	ug/l	YES
MW-3	10/26/1999	1,4-DIOXANE	160	7	ug/l	YES
MW-3	7/14/1999	1,4-DIOXANE	<300	7	ug/l	hi DL
MW-3	4/13/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-4A	4/7/2005	1,4-DIOXANE	58	7	ug/l	YES
MW-4A	10/14/2004	1,4-DIOXANE	120	7	ug/l	YES
MW-4A	4/7/2004	1,4-DIOXANE	78	7	ug/l	YES
MW-4A	10/23/2003	1,4-DIOXANE	16 J	7	ug/l	YES
MW-4A	4/16/2003	1,4-DIOXANE	47	7	ug/l	YES
MW-4A	7/9/2002	1,4-DIOXANE	99	7	ug/l	YES
MW-4A	1/25/2002	1,4-DIOXANE	300	7	ug/l	YES
MW-4A	4/10/2001	1,4-DIOXANE	730	7	ug/l	YES
MW-4A	4/13/2000	1,4-DIOXANE	290	7	ug/l	YES
MW-4A	1/11/2000	1,4-DIOXANE	370	7	ug/l	YES
MW-4A	10/26/1999	1,4-DIOXANE	420	7	ug/l	YES
MW-4A	7/14/1999	1,4-DIOXANE	460	7	ug/l	YES
MW-4A	4/13/1999	1,4-DIOXANE	340	7	ug/l	YES
MW-4A	1/1/1990	1,4-DIOXANE	2300	7	ug/l	YES
MW-4A	6/1/1988	1,4-DIOXANE	5400	7	ug/l	YES
MW-4A	5/1/1987	1,4-DIOXANE	1900	7	ug/l	YES

Table 3
Summary of Groundwater Analytical Results for 1,4-Dioxane
Former DuPont Kentec Plant

SAMPLE	DATE	ANALYTE	RsltPost	NC 2L Standard	UNITS	Above Reg
MW-4B	4/7/2005	1,4-DIOXANE	<1.5	7	ug/l	NO
MW-4B	10/14/2004	1,4-DIOXANE	<1.6	7	ug/l	NO
MW-4B	4/7/2004	1,4-DIOXANE	<1.5	7	ug/l	NO
MW-4B	10/23/2003	1,4-DIOXANE	<1.5	7	ug/l	NO
MW-4B	4/16/2003	1,4-DIOXANE	<20	7	ug/l	hi DL
MW-4B	7/9/2002	1,4-DIOXANE	<1.6	7	ug/l	NO
MW-4B	1/24/2002	1,4-DIOXANE	<1.6	7	ug/l	NO
MW-4B	4/10/2001	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-4B	4/13/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-4B	1/11/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-4B	10/26/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-4B	7/14/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-4B	4/13/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-6	4/7/2005	1,4-DIOXANE	210	7	ug/l	YES
MW-6	10/14/2004	1,4-DIOXANE	210	7	ug/l	YES
MW-6	4/7/2004	1,4-DIOXANE	230	7	ug/l	YES
MW-6	10/23/2003	1,4-DIOXANE	350	7	ug/l	YES
MW-6	4/17/2003	1,4-DIOXANE	260	7	ug/l	YES
MW-6	7/8/2002	1,4-DIOXANE	680	7	ug/l	YES
MW-6	1/24/2002	1,4-DIOXANE	1300	7	ug/l	YES
MW-6	4/10/2001	1,4-DIOXANE	710 D	7	ug/l	YES
MW-6	4/10/2001	1,4-DIOXANE	830 D	7	ug/l	YES
MW-6	4/13/2000	1,4-DIOXANE	770	7	ug/l	YES
MW-6	1/11/2000	1,4-DIOXANE	940	7	ug/l	YES
MW-6	10/26/1999	1,4-DIOXANE	1200 D	7	ug/l	YES
MW-6	7/14/1999	1,4-DIOXANE	1200	7	ug/l	YES
MW-7A	4/7/2005	1,4-DIOXANE	27	7	ug/l	YES
MW-7A	10/14/2004	1,4-DIOXANE	17 J	7	ug/l	YES
MW-7A	4/7/2004	1,4-DIOXANE	120	7	ug/l	YES
MW-7A	10/23/2003	1,4-DIOXANE	120	7	ug/l	YES
MW-7A	4/17/2003	1,4-DIOXANE	93	7	ug/l	YES
MW-7A	7/8/2002	1,4-DIOXANE	84	7	ug/l	YES
MW-7A	1/24/2002	1,4-DIOXANE	59	7	ug/l	YES
MW-7A	4/10/2001	1,4-DIOXANE	30	7	ug/l	YES
MW-7A	4/10/2001	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-7A	4/13/2000	1,4-DIOXANE	370	7	ug/l	YES
MW-7A	1/11/2000	1,4-DIOXANE	380	7	ug/l	YES
MW-7A	10/27/1999	1,4-DIOXANE	320	7	ug/l	YES
MW-7A	10/27/1999	1,4-DIOXANE	590	7	ug/l	YES
MW-7A	7/14/1999	1,4-DIOXANE	210	7	ug/l	YES
MW-7A	4/13/1999	1,4-DIOXANE	170	7	ug/l	YES

Table 3
Summary of Groundwater Analytical Results for 1,4-Dioxane
Former DuPont Kentec Plant

SAMPLE	DATE	ANALYTE	RsltPost	NC 2L Standard	UNITS	Above Reg
MW-7B	4/7/2005	1,4-DIOXANE	<1.6	7	ug/l	NO
MW-7B	10/14/2004	1,4-DIOXANE	<1.6	7	ug/l	NO
MW-7B	4/7/2004	1,4-DIOXANE	<1.6	7	ug/l	NO
MW-7B	10/23/2003	1,4-DIOXANE	<1.5	7	ug/l	NO
MW-7B	4/17/2003	1,4-DIOXANE	<19	7	ug/l	NO
MW-7B	7/8/2002	1,4-DIOXANE	<1.6	7	ug/l	NO
MW-7B	1/24/2002	1,4-DIOXANE	<1.6	7	ug/l	NO
MW-7B	4/10/2001	1,4-DIOXANE	<150	7	ug/l	NO
MW-7B	4/13/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-7B	1/11/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-7B	10/27/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-7B	7/14/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-7B	4/13/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-8	4/7/2005	1,4-DIOXANE	7.6	7	ug/l	YES
MW-8	10/14/2004	1,4-DIOXANE	24	7	ug/l	YES
MW-8	4/7/2004	1,4-DIOXANE	17 J	7	ug/l	YES
MW-8	10/23/2003	1,4-DIOXANE	25	7	ug/l	YES
MW-8	4/16/2003	1,4-DIOXANE	11 J	7	ug/l	YES
MW-8	7/9/2002	1,4-DIOXANE	28	7	ug/l	YES
MW-8	1/25/2002	1,4-DIOXANE	22	7	ug/l	YES
MW-8	4/10/2001	1,4-DIOXANE	16 J	7	ug/l	YES
MW-8	4/10/2001	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-8	4/13/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-8	1/11/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-8	10/26/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-8	7/14/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-8	4/13/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-9	4/10/2001	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-9	4/13/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-9	1/11/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-9	10/26/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-9	7/14/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-9	4/13/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-10A	4/7/2005	1,4-DIOXANE	<1.6	7	ug/l	NO
MW-10A	10/14/2004	1,4-DIOXANE	<1.6	7	ug/l	NO
MW-10A	4/6/2004	1,4-DIOXANE	<1.6	7	ug/l	NO
MW-10A	10/22/2003	1,4-DIOXANE	<1.5	7	ug/l	NO
MW-10A	4/16/2003	1,4-DIOXANE	2.8 J	7	ug/l	NO
MW-10A	7/9/2002	1,4-DIOXANE	12 J	7	ug/l	YES
MW-10A	1/24/2002	1,4-DIOXANE	19 J	7	ug/l	YES
MW-10A	4/10/2001	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-10A	4/10/2001	1,4-DIOXANE	17 J	7	ug/l	YES
MW-10A	4/13/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-10A	1/11/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-10A	10/26/1999	1,4-DIOXANE	780	7	ug/l	YES
MW-10A	7/14/1999	1,4-DIOXANE	<150	7	ug/l	hi DL

Table 3
Summary of Groundwater Analytical Results for 1,4-Dioxane
Former DuPont Kentec Plant

SAMPLE	DATE	ANALYTE	RsltPost	NC 2L Standard	UNITS	Above Reg
MW-10B	4/10/2001	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-10B	4/13/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-10B	1/11/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-10B	10/26/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-10B	7/14/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-10B	4/13/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-11A	4/6/2005	1,4-DIOXANE	13 J	7	ug/l	YES
MW-11A	10/14/2004	1,4-DIOXANE	6.3 J	7	ug/l	NO
MW-11A	4/6/2004	1,4-DIOXANE	2.6 J	7	ug/l	NO
MW-11A	10/22/2003	1,4-DIOXANE	1.5 J	7	ug/l	NO
MW-11A	4/16/2003	1,4-DIOXANE	<21	7	ug/l	hi DL
MW-11A	7/9/2002	1,4-DIOXANE	2.9 J	7	ug/l	NO
MW-11A	1/24/2002	1,4-DIOXANE	6.3 J	7	ug/l	NO
MW-11A	4/10/2001	1,4-DIOXANE	3.7 J	7	ug/l	NO
MW-11A	4/10/2001	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-11A	4/13/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-11A	1/12/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-11A	10/27/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-11A	7/14/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-11B	4/10/2001	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-11B	4/13/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-11B	1/12/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-11B	10/27/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-11B	7/14/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-11B	4/13/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-12	4/10/2001	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-12	4/10/2001	1,4-DIOXANE	2.5 J	7	ug/l	NO
MW-12	4/13/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-12	1/11/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-12	10/26/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-12	7/14/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-14A	4/7/2005	1,4-DIOXANE	2.7 J	7	ug/l	NO
MW-14A	10/14/2004	1,4-DIOXANE	6.6 J	7	ug/l	NO
MW-14A	4/6/2004	1,4-DIOXANE	3.0 J	7	ug/l	NO
MW-14A	10/22/2003	1,4-DIOXANE	21	7	ug/l	YES
MW-14A	4/17/2003	1,4-DIOXANE	<20	7	ug/l	hi DL
MW-14A	7/8/2002	1,4-DIOXANE	60	7	ug/l	YES
MW-14A	1/24/2002	1,4-DIOXANE	34	7	ug/l	YES
MW-14A	4/10/2001	1,4-DIOXANE	<1.6	7	ug/l	NO
MW-14A	4/10/2001	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-14A	4/13/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-14A	1/12/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-14A	10/27/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-14A	7/14/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-14A	4/13/1999	1,4-DIOXANE	<150	7	ug/l	hi DL

Table 3
Summary of Groundwater Analytical Results for 1,4-Dioxane
Former DuPont Kentec Plant

SAMPLE	DATE	ANALYTE	RsltPost	NC 2L Standard	UNITS	Above Reg
MW-14B	4/7/2005	1,4-DIOXANE	<1.6	7	ug/l	NO
MW-14B	10/14/2004	1,4-DIOXANE	<1.6	7	ug/l	NO
MW-14B	4/6/2004	1,4-DIOXANE	<1.6	7	ug/l	NO
MW-14B	10/22/2003	1,4-DIOXANE	<1.5	7	ug/l	NO
MW-14B	4/17/2003	1,4-DIOXANE	<21	7	ug/l	hi DL
MW-14B	7/8/2002	1,4-DIOXANE	<1.6	7	ug/l	NO
MW-14B	1/24/2002	1,4-DIOXANE	<1.6	7	ug/l	NO
MW-14B	4/10/2001	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-14B	4/13/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-14B	1/12/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-14B	10/27/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-14B	7/14/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-14B	4/13/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-15	4/7/2005	1,4-DIOXANE	34	7	ug/l	YES
MW-15	10/14/2004	1,4-DIOXANE	28	7	ug/l	YES
MW-15	4/6/2004	1,4-DIOXANE	24	7	ug/l	YES
MW-15	10/22/2003	1,4-DIOXANE	22	7	ug/l	YES
MW-15	4/17/2003	1,4-DIOXANE	25	7	ug/l	YES
MW-15	7/8/2002	1,4-DIOXANE	32	7	ug/l	YES
MW-15	1/24/2002	1,4-DIOXANE	11 J	7	ug/l	hi DL
MW-15	4/10/2001	1,4-DIOXANE	<150	7	ug/l	YES
MW-15	4/10/2001	1,4-DIOXANE	15 J	7	ug/l	hi DL
MW-15	4/13/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-15	1/12/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-15	10/27/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-15	7/14/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-16	4/10/2001	1,4-DIOXANE	<1.6	7	ug/l	NO
MW-16	4/10/2001	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-16	4/13/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-16	1/12/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-16	10/27/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-16	7/14/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-18	4/10/2001	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-18	4/14/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-18	1/12/2000	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-18	10/26/1999	1,4-DIOXANE	<150	7	ug/l	hi DL
MW-18	7/14/1999	1,4-DIOXANE	<150	7	ug/l	hi DL

NOTE:

hi DL = High detection limit cannot be used for direct comparison to standard
"<" = Non-detect at stated reporting limit
J = Detected below the practical quantation limit (PQL) and therefore is considered an estimate
D = Dilution

Table 4
Summary of Surface Water Analytical Results
Former DuPont Kentec Plant

SAMPLE	DATE	ANALYTE	RsltPost	NC 2B Standard	UNITS	Above Reg
SW-11	4/7/2005	1,1-DICHLOROETHENE	<0.43	340	ug/l	NO
SW-11	10/14/2004	1,1-DICHLOROETHENE	<0.13	340	ug/l	NO
SW-11	4/7/2004	1,1-DICHLOROETHENE	<0.33	340	ug/l	NO
SW-11	10/23/2003	1,1-DICHLOROETHENE	<0.33	340	ug/l	NO
SW-11	4/16/2003	1,1-DICHLOROETHENE	0.49 J	340	ug/l	NO
SW-11	1/24/2002	1,1-DICHLOROETHENE	<0.33	340	ug/l	NO
SW-11	4/10/2001	1,1-DICHLOROETHENE	<5.0	340	ug/l	NO
SW-11	4/14/2000	1,1-DICHLOROETHENE	<5.0	340	ug/l	NO
SW-11	1/12/2000	1,1-DICHLOROETHENE	<5.0	340	ug/l	NO
SW-11	10/27/1999	1,1-DICHLOROETHENE	<5.0	340	ug/l	NO
SW-11	7/13/1999	1,1-DICHLOROETHENE	<5.0	340	ug/l	NO
SW-11	4/7/2005	1,1-DICHLOROETHANE	<0.37	3400	ug/l	NO
SW-11	10/14/2004	1,1-DICHLOROETHANE	<0.057	3400	ug/l	NO
SW-11	4/7/2004	1,1-DICHLOROETHANE	<0.43	3400	ug/l	NO
SW-11	10/23/2003	1,1-DICHLOROETHANE	<0.43	3400	ug/l	NO
SW-11	4/16/2003	1,1-DICHLOROETHANE	<1.0	3400	ug/l	NO
SW-11	1/24/2002	1,1-DICHLOROETHANE	<0.43	3400	ug/l	NO
SW-11	4/10/2001	1,1-DICHLOROETHANE	<5.0	3400	ug/l	NO
SW-11	4/14/2000	1,1-DICHLOROETHANE	<5.0	3400	ug/l	NO
SW-11	1/12/2000	1,1-DICHLOROETHANE	<5.0	3400	ug/l	NO
SW-11	10/27/1999	1,1-DICHLOROETHANE	<5.0	3400	ug/l	NO
SW-11	7/13/1999	1,1-DICHLOROETHANE	<5.0	3400	ug/l	NO
SW-11	4/7/2005	1,4-DIOXANE	14 J	305	ug/l	NO
SW-11	10/14/2004	1,4-DIOXANE	15 J	305	ug/l	NO
SW-11	4/7/2004	1,4-DIOXANE	9.0 J	305	ug/l	NO
SW-11	10/23/2003	1,4-DIOXANE	15 J	305	ug/l	NO
SW-11	4/16/2003	1,4-DIOXANE	21	305	ug/l	NO
SW-11	1/24/2002	1,4-DIOXANE	8.1 J	305	ug/l	NO
SW-11	4/10/2001	1,4-DIOXANE	<150	305	ug/l	NO
SW-11	4/14/2000	1,4-DIOXANE	<150	305	ug/l	NO
SW-11	1/12/2000	1,4-DIOXANE	<150	305	ug/l	NO
SW-11	10/27/1999	1,4-DIOXANE	<150	305	ug/l	NO
SW-11	7/13/1999	1,4-DIOXANE	<150	305	ug/l	NO

Table 4
Summary of Surface Water Analytical Results
Former DuPont Kentec Plant

SAMPLE	DATE	ANALYTE	RsltPost	NC 2B Standard	UNITS	Above Reg
SW-24	4/10/2001	1,1-DICHLOROETHENE	<5.0	340	ug/l	NO
SW-24	4/14/2000	1,1-DICHLOROETHENE	<5.0	340	ug/l	NO
SW-24	1/12/2000	1,1-DICHLOROETHENE	<5.0	340	ug/l	NO
SW-24	10/27/1999	1,1-DICHLOROETHENE	<5.0	340	ug/l	NO
SW-24	7/13/1999	1,1-DICHLOROETHENE	<5.0	340	ug/l	NO
SW-24	4/10/2001	1,1-DICHLOROETHANE	<5.0	3400	ug/l	NO
SW-24	4/14/2000	1,1-DICHLOROETHANE	<5.0	3400	ug/l	NO
SW-24	1/12/2000	1,1-DICHLOROETHANE	<5.0	3400	ug/l	NO
SW-24	10/27/1999	1,1-DICHLOROETHANE	<5.0	3400	ug/l	NO
SW-24	7/13/1999	1,1-DICHLOROETHANE	<5.0	3400	ug/l	NO
SW-24	4/10/2001	1,4-DIOXANE	<150	305	ug/l	NO
SW-24	4/14/2000	1,4-DIOXANE	<150	305	ug/l	NO
SW-24	1/12/2000	1,4-DIOXANE	<150	305	ug/l	NO
SW-24	10/27/1999	1,4-DIOXANE	<150	305	ug/l	NO
SW-24	7/13/1999	1,4-DIOXANE	<150	305	ug/l	NO

NOTE:

hi DL = High detection limit cannot be used for direct comparison to standard
"<" = Non-detect at stated reporting limit
J = Detected below the practical quantation limit (PQL) and therefore is considered an estimate
D = Dilution

APPENDIX A

KENTEC FACILITY

REGIONAL GEOLOGY

The DuPont Kentec site is located along the inner margin of the central coastal plain, about 25 miles southeast of the piedmont. The sediments of the North Carolina Coastal Plain are a wedge-shaped sequence of marine and non-marine rocks that dip and thicken to the southeast. Approximately 800 feet of sediments overlie crystalline bedrock in the area near the DuPont Kentec site (NCDNR&CR, 1985). These sediments are from Lower Crètaceous to Recent in age. The major sedimentary units that overlie the bedrock, from oldest to youngest, are: (1) the Cape Fear Formation, (2) the Black Creek Formation, (3) the Peedee Formation, and (4) surficial deposits. This study involves sediments from the upper part of the Peedee Formation and from the surficial deposits overlying the Peedee.

The Peedee Formation consists of dark green or gray, medium-to coarse-grained quartz sands interlayered and mixed with marine clays and silts. The sand beds are commonly gray or greenish gray and contain varying amounts of glauconite. The Peedee Formation is approximately 120 feet thick in the Kinston, North Carolina area. The surficial deposits consist of thin beds of sand and clay that may attain a thickness of 10 to 20 feet locally.

SITE GEOLOGY

Three distinct sedimentary units were encountered during drilling at the site. The uppermost unit consists of yellowish brown to yellowish orange, fine to very coars sand and silty sand. This unit is from 4 to 10 feet thick at the site. The unit tends to be finer-grained and more silty in the upper 3 feet and denser and coarser at its base; it contained pebbles at and near its base in some boreholes. This uppermost unit is believed to correspond to the surficial deposits that overlie the Peedee Formation regionally.

Underlying these sands is a deposit of gray to greenish gray, stiff, clayey and sandy silts; there is a notable variation in the relative proportions of sand and clay from place to place in the unit. The deposit is flay lying, approximately 20 feet thick, and appears to be part of the upper portion of the Peedee Formation.

The clayey, sandy silt, mentioned above, is underlain by a deposit of loose, fine to medium, greenish-gray to dark gray, glauconitic sand with some interfingered sand and silt layers and fragments of calcareous sandstone and shells. The upper portion of this unit contains some stiff, clayey silts and clayey sands. This unit is also considered to be part of the Peedee Formaiton.

REGIONAL HYDROGEOLOGY

The regional hydrogeologic system of the North Carolina Coastal Plain in the area near Kentec comprises several aquifers within the geologic units discussed in the previous section. From shallowest to deepest, these are: (1) the surficial aquifer, (2) the Peedee aquifer, (3) the Black Creek aquifer, and (4) the Cape Fear aquifer. These aquifers are not co-extensive with the geologic units of the same name, however; they include only the more permeable zones within each unit. The aquifer of primary interest is the surficial aquifer. Based on laboratory analyses of Shelby Tube samples, the average linear velocity of downward flow through the clayey silt unit is estimated to range from 0.03 feet per year to 0.3 feet per year.

DuPont Kentec Plant
Kinston, NC

Physical Parameters of the Shallow and Deep Aquifers

Monitoring Well ID	Hydraulic Conductivity (K) (cm/sec)	Hydraulic Conductivity (K) (ft/day)	Transmissivity (T) (ft^2/day)	Specific Yield* (S_y) (No Units)
Shallow Aquifer	Slug Test (Rising Head)	Slug Test (Rising Head)		
MW-3	8×10^{-4}	2	8	0.01-0.30
MW-4	1×10^{-3}	3	19.5	0.01-0.30
MW-5	3×10^{-3}	9	63	0.01-0.30
MW-7	6×10^{-3}	20	40	0.01-0.30
MW-8	4×10^{-2}	100	100	0.01-0.30
MW-10	1×10^{-3}	3	27	0.01-0.30
MW-13	5×10^{-5}	0.1	0.4	0.01-0.30
MW-16	1×10^{-3}	3	15	0.01-0.30
Deep Aquifer				
MW-4B	1×10^{-2}	30	NA	NA
MW-7B	3×10^{-2}	90	NA	NA
MW-14B	1×10^{-3}	3	NA	NA

NA= Not Available
*= The specific yield of unconfined aquifers generally range from 0.01 to 0.30 (finer grained units have smaller values of specific yield). See Freeze and Cherry, 1979, Groundwater, p.61.
Note: Storage in aquifer appears to be stratigraphically controlled along bedding planes.

Physical Parameters of the Confining Unit
Results of Shelby Tube Analyses

Monitoring Well ID (Deep Well)	Depth of Sample (feet)	Elevation of Sample (feet above MSL)	Vertical Hydraulic Conductivity (feet/day)
MW-4B	17-19	11.4-13.4	0.1
MW-7B	11-13	14.8-16.8	0.1
MW-14B	15-17	8.3-10.3	0.0009

Table 3-4
VERTICAL GRADIENTS AT DU PONT KENTEC
FEBRUARY 1, 1990

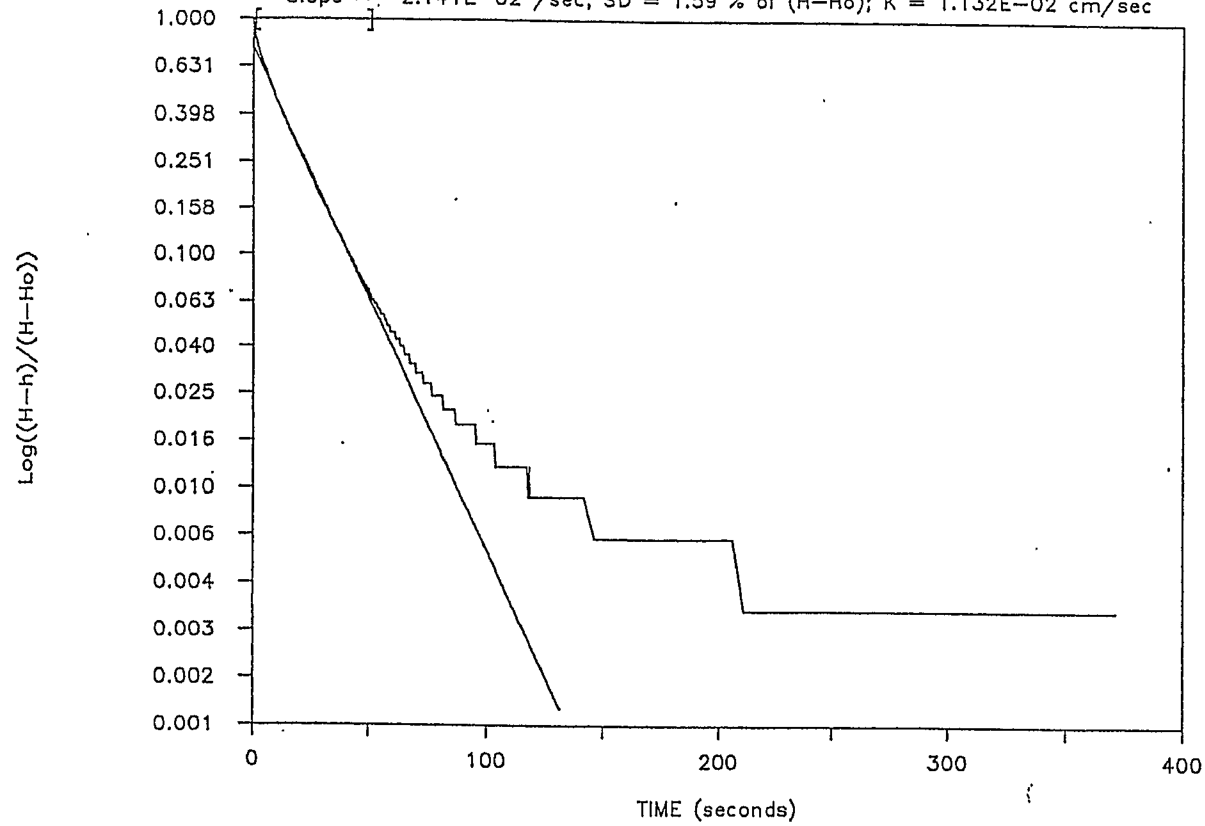
Well Pair	Hydraulic Head in Shallow Well (ft MSL)	Elevation of Screened Zone of Shallow Well (ft MSL)	Hydraulic Head in Deep Well (ft MSL)	Elevation of Screened Zone of Deep Well (ft MSL)	Distance Between Screen Centers (ft)	Downward Gradient*
MW4A/B	27.08	15.6 to 25.6	22.14	-25.6 to -15.6	41.2	0.12
MW7A/B	24.09	17.9 to 22.9	22.13	-18.2 to -8.2	33.6	0.058
MW14A/B	22.40	17.4 to 21.9	21.83	-25.3 to -15.3	40.0	0.014

*Gradient measured between centers of screened intervals.

WDCR478/014.51

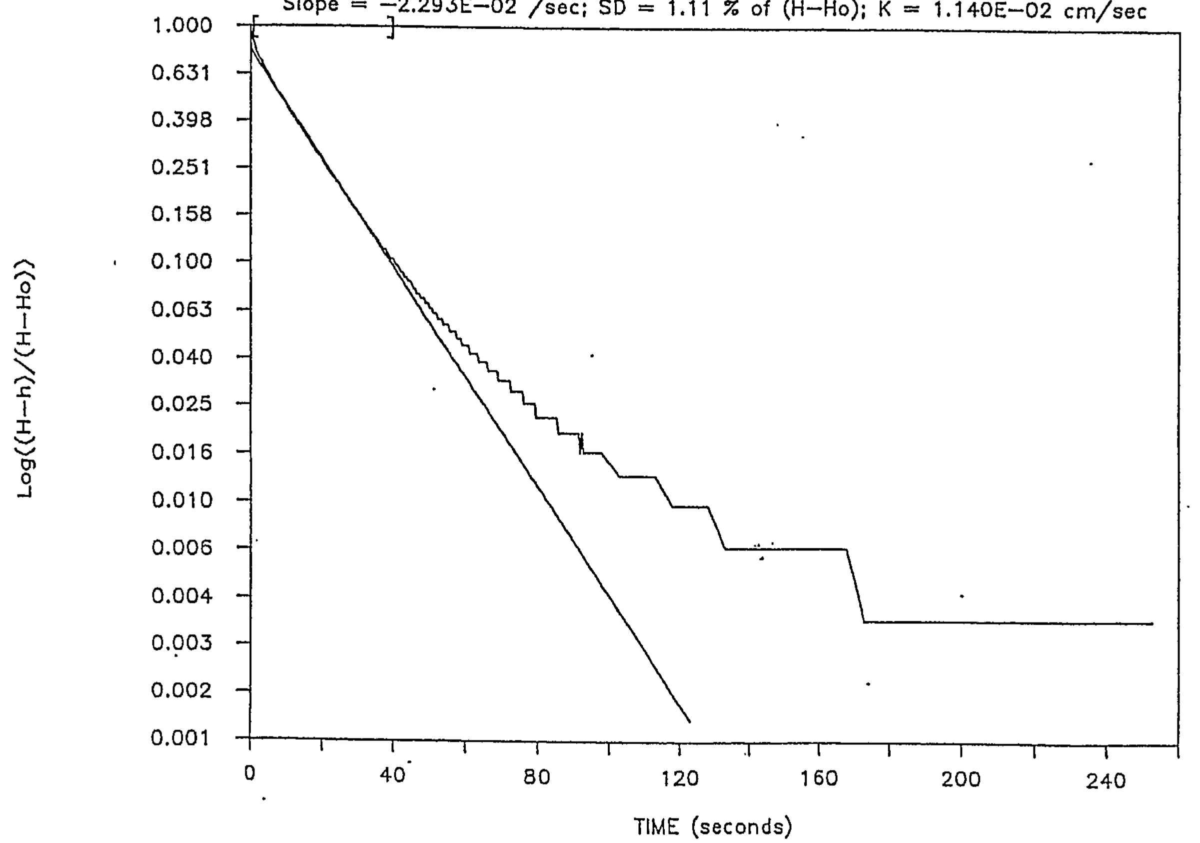
Aquifer Slug Test #1 (Rising Head) at MW-4B; 303 data points

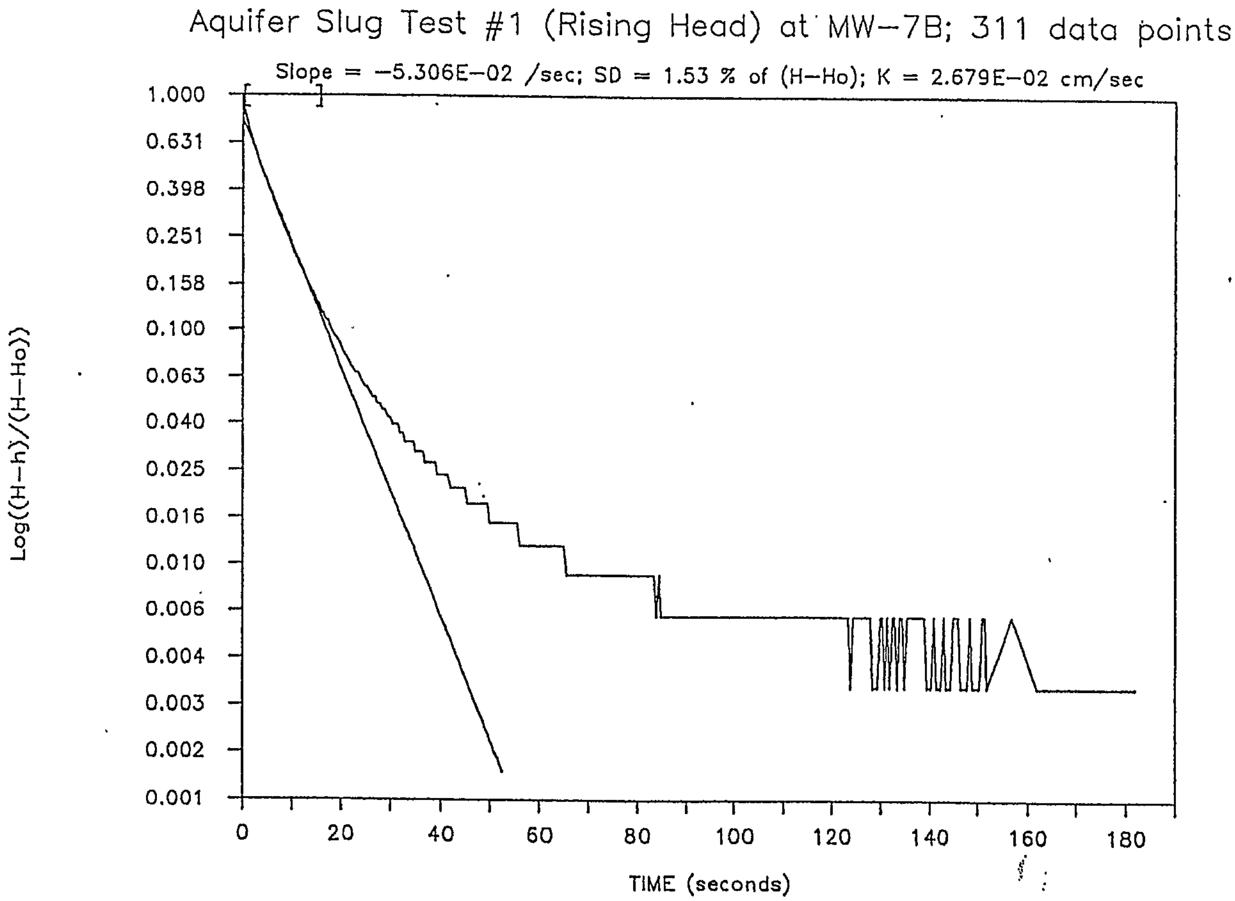
Slope = -2.141E-02 /sec; SD = 1.59 % of (H-Ho); K = 1.132E-02 cm/sec



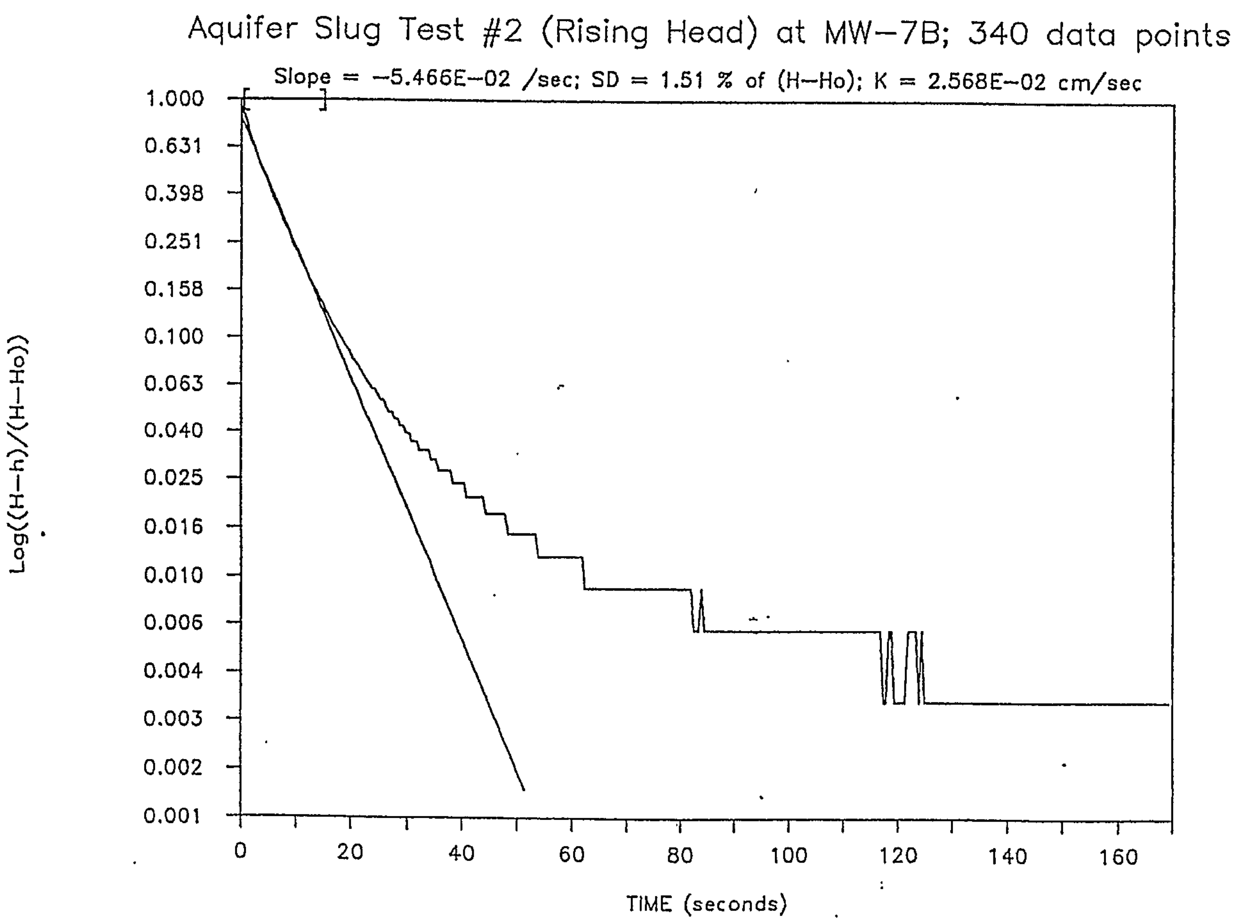
Aquifer Slug Test #2 (Rising Head) at MW-4B; 219 data points

Slope = -2.293E-02 /sec; SD = 1.11 % of (H-Ho); K = 1.140E-02 cm/sec



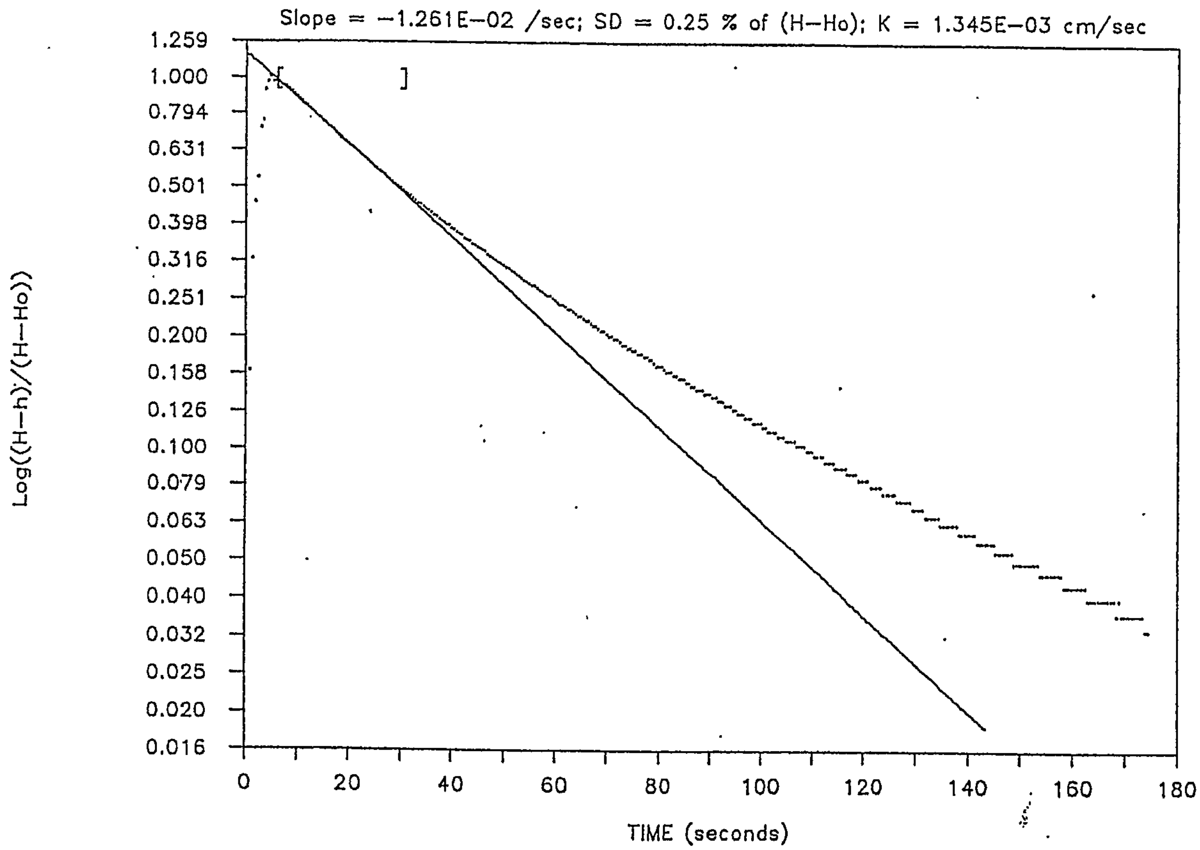


Aquifer Slug Test #1 (Rising Head) at MW-7B; 311 data points
Slope = -5.306E-02 /sec; SD = 1.53 % of (H-Ho); K = 2.679E-02 cm/sec
Log((H-h)/(H-Ho))
1.000
0.631
0.398
0.251
0.158
0.100
0.063
0.040
0.025
0.016
0.010
0.006
0.004
0.003
0.002
0.001
0
20
40
60
80
100
120
140
160
180
TIME (seconds)

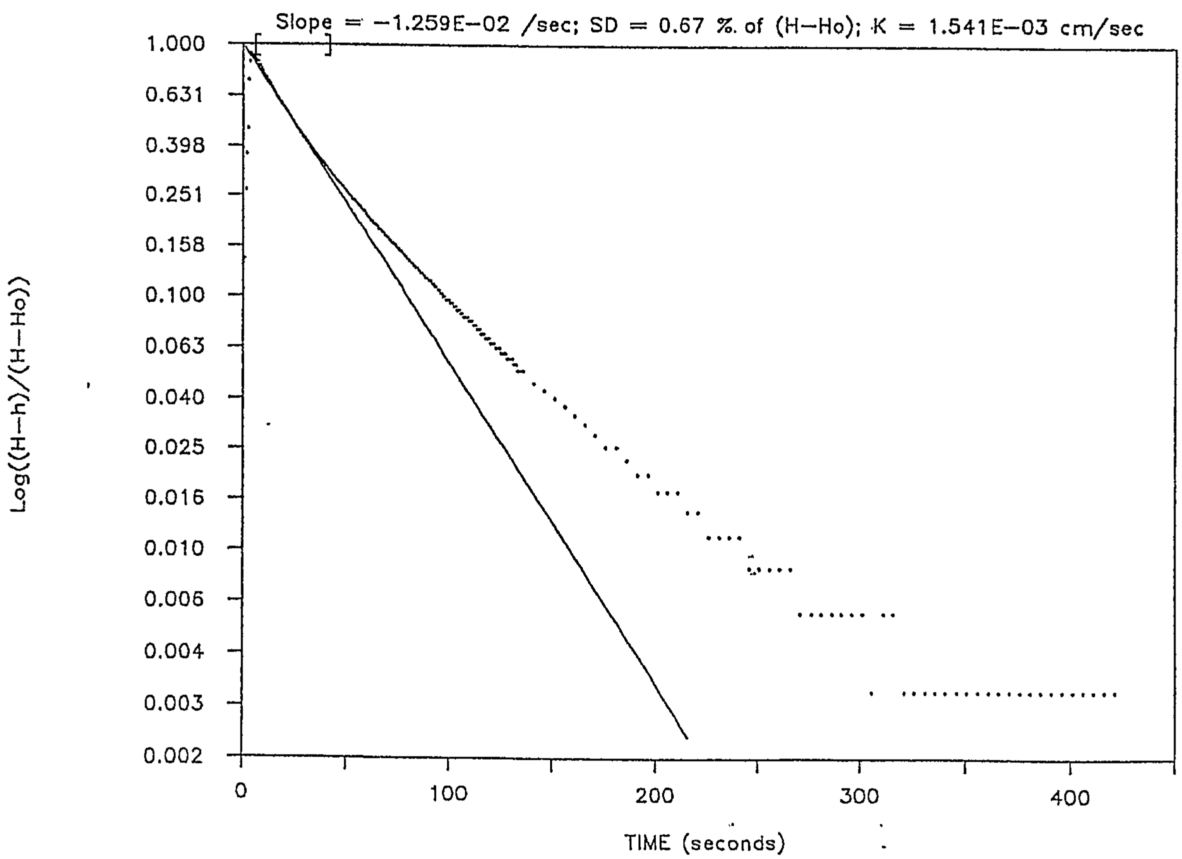


Aquifer Slug Test #2 (Rising Head) at MW-7B; 340 data points
Slope = -5.466E-02 /sec; SD = 1.51 % of (H-Ho); K = 2.568E-02 cm/sec
Log((H-h)/(H-Ho))
1.000
0.631
0.398
0.251
0.158
0.100
0.063
0.040
0.025
0.016
0.010
0.006
0.004
0.003
0.002
0.001
0
20
40
60
80
100
120
140
160
TIME (seconds)

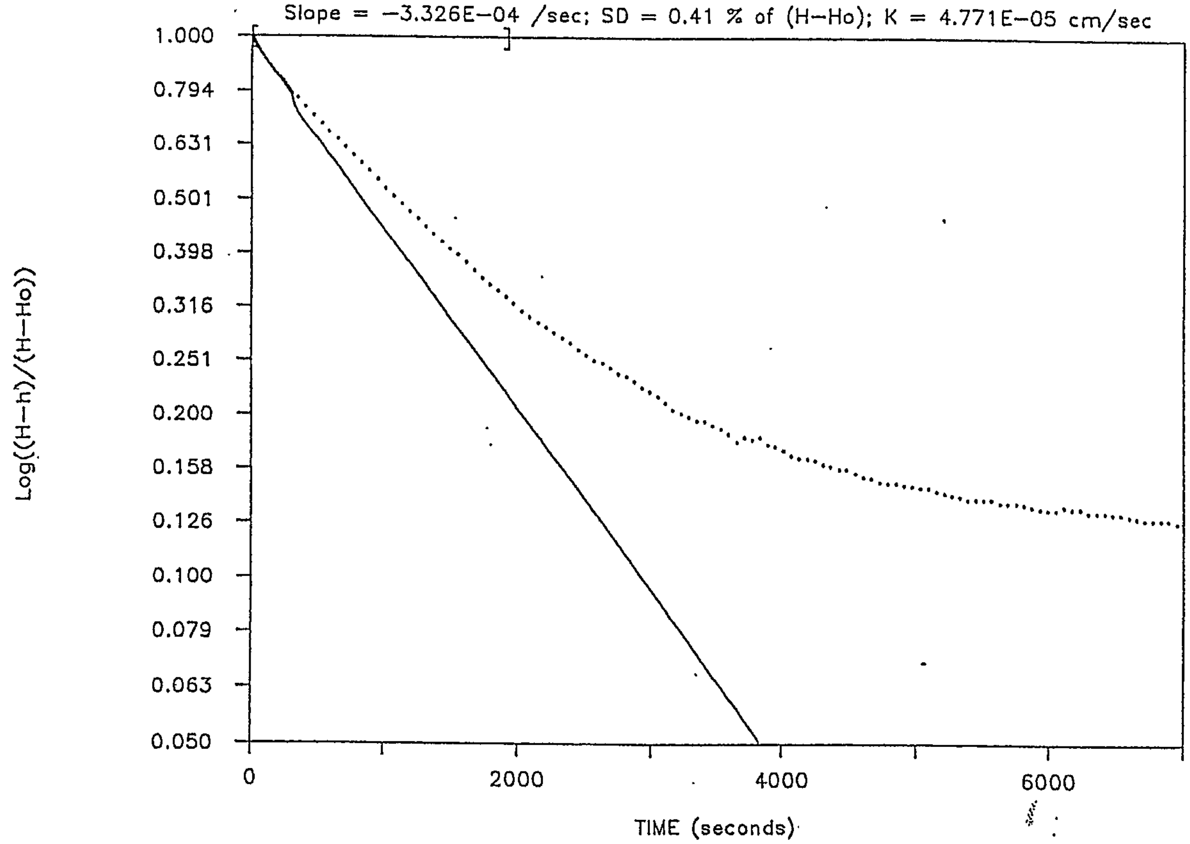
Aquifer Slug Test #1 (Falling Head) at MW-10; 350 data points



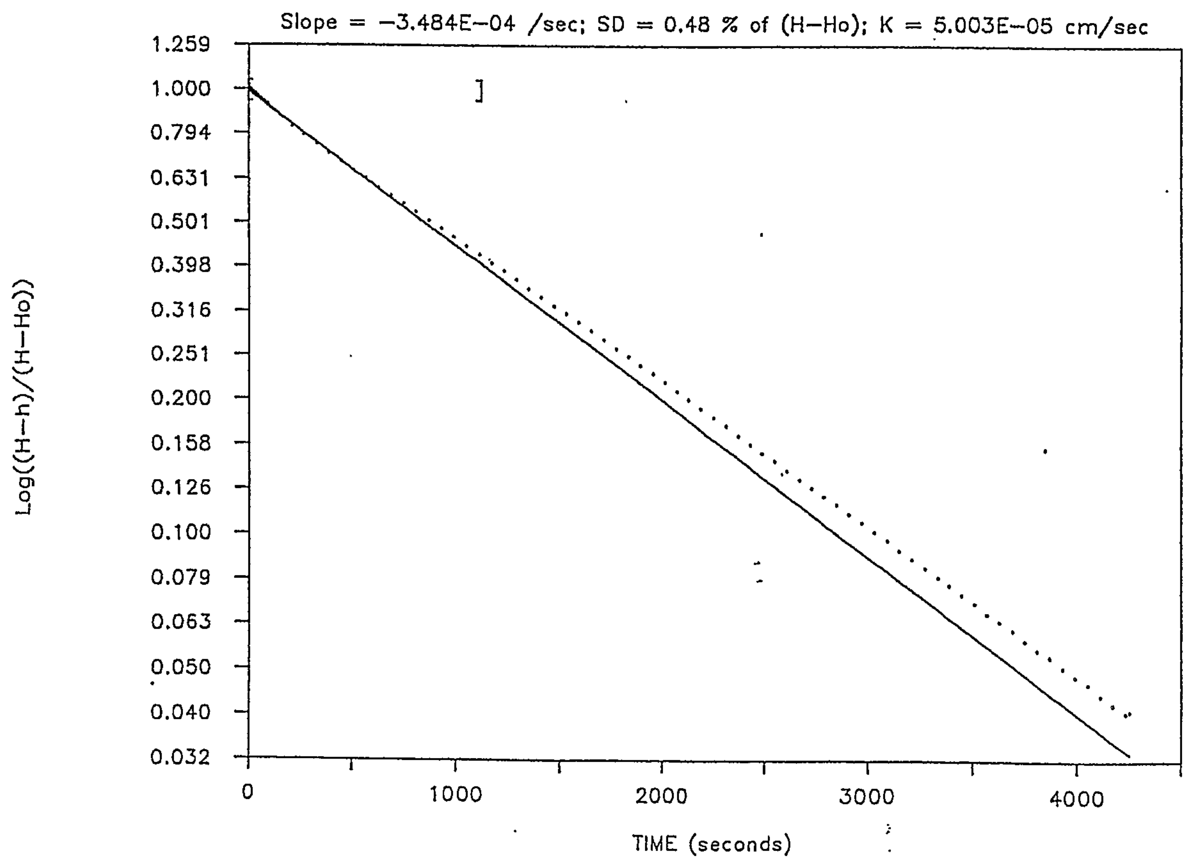
Aquifer Slug Test #2 (Falling Head) at MW-10; 350 data points



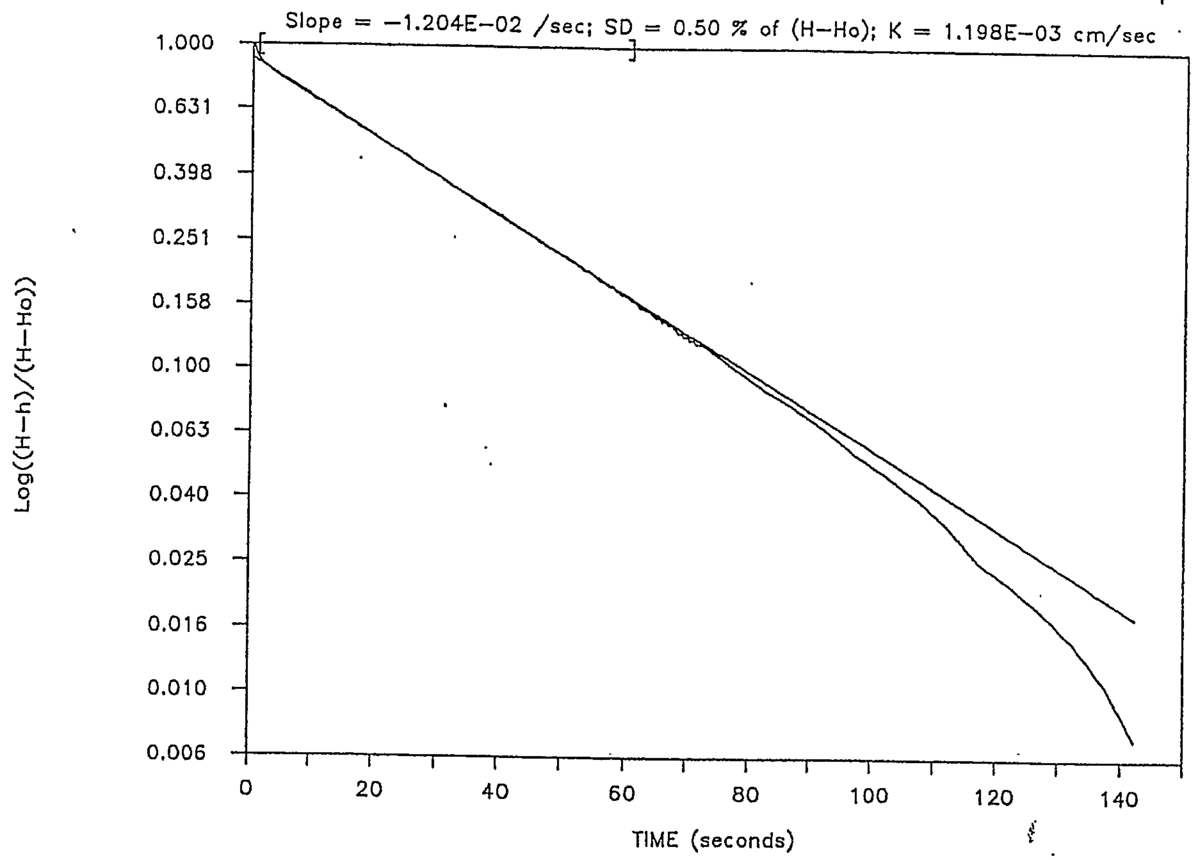
Aquifer Slug Test #1 (Falling Head) at MW-13; 287 data points



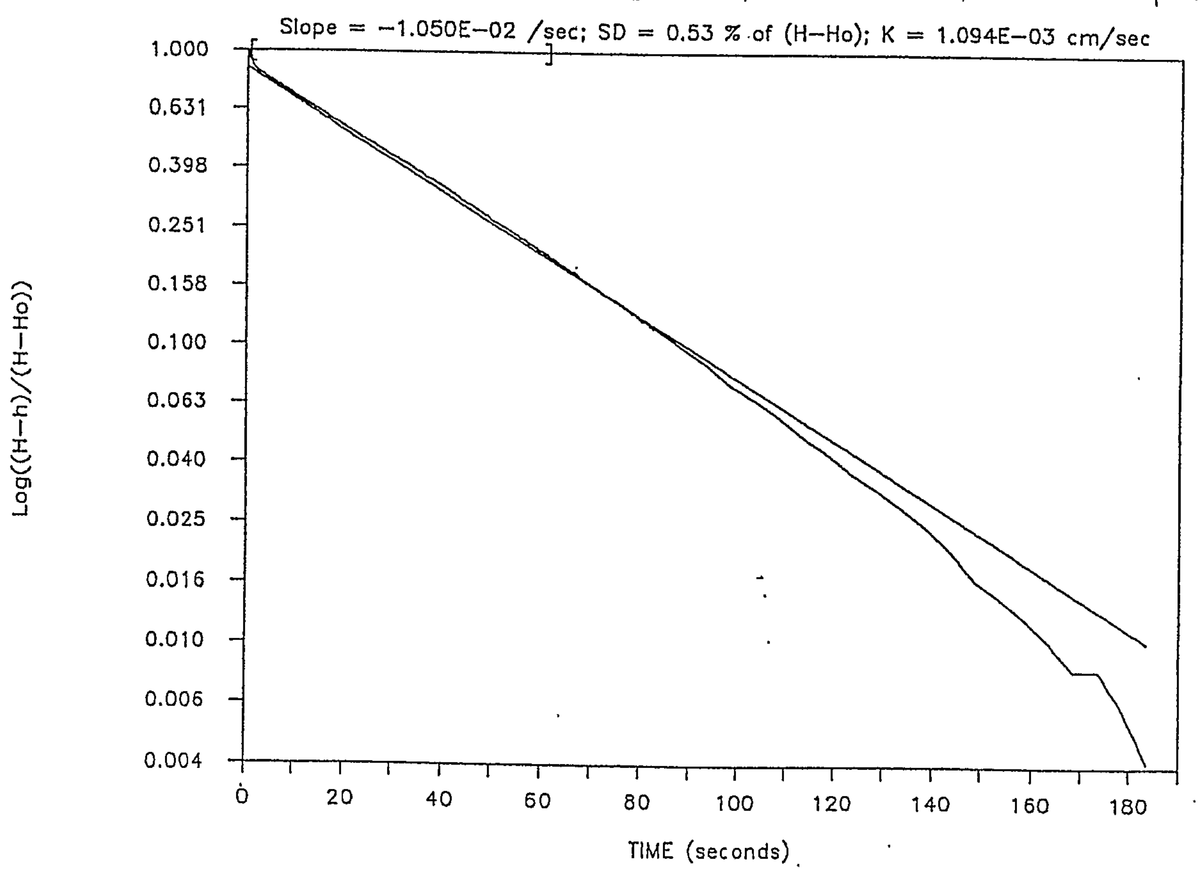
Aquifer Slug Test #2 (Falling Head) at MW-13; 139 data points



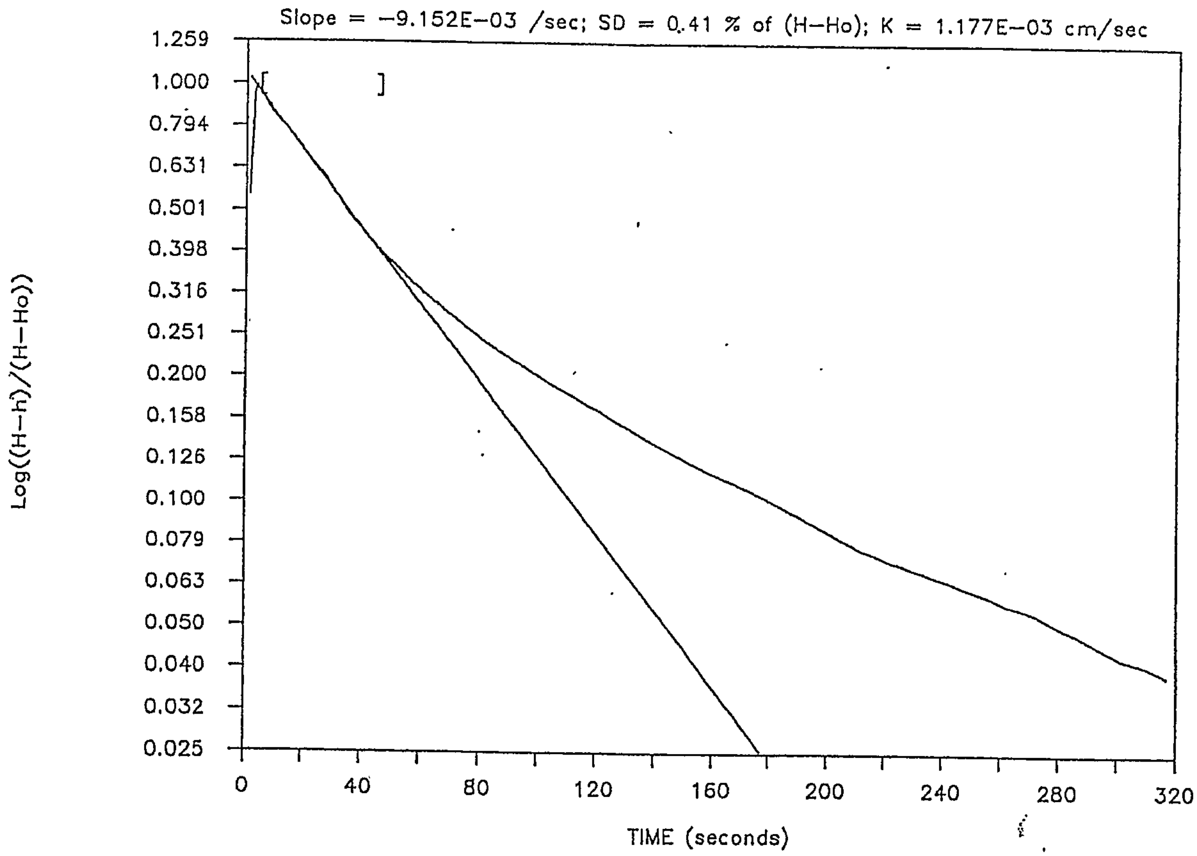
Aquifer Slug Test #1 (Rising Head) at MW-14B; 161 data points



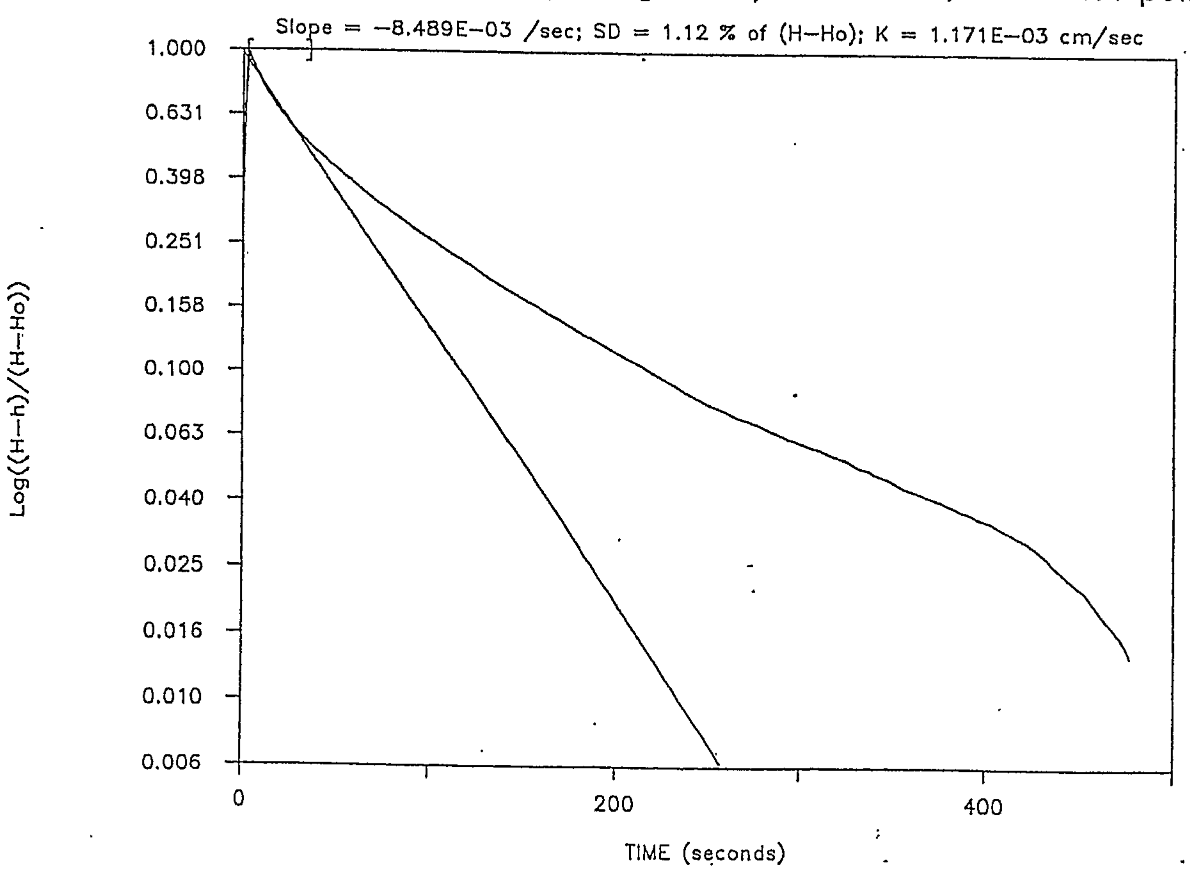
Aquifer Slug Test #2 (Rising Head) at MW-14B; 195 data points



Aquifer Slug Test #1 (Falling Head) at MW-16; 242 data points

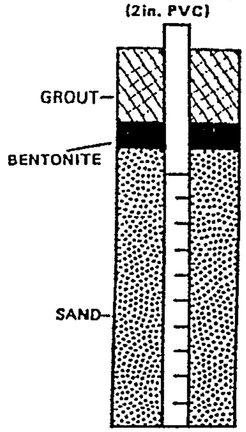


Aquifer Slug Test #2 (Falling Head) at MW-16; 281 data points

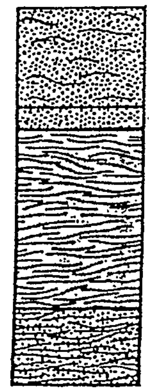


Depth (ft.)	Elevation (ft.)
	29.0
5	24.0
10	19.0
15	14.0
20	9.0

Well Construction (2in. PVC)



Pictorial Log



Sample Number	Interval (ft.)	Recovery (in.)	Blow Counts 6"–6"–6"–6"	Written Log
S1	0–1.5	11	3–3–4	Fine silty sand, dusky brown (5YR 2/2)–gray orange (10YR 7/4), moist.
S2	3.5–5	18	7–9–11	M – c. sand, gray-orange (10YR 7/4), to fine sil y sand, green gray (5GY 4/1), wet.
S3	8.5–10	24	12–16–22	Clayey silt with trace sand, green-black (5G 2/1), dense, sl. plastic, moist.
S4	13.5–15	20	5–9–12	Sandy silt with trace clay, green black (5G 2/1), dense, v. sl. plastic, some glauconite, v. moist.

WELL CONSTRUCTION AND GEOLOGIC LOG
MONITORING WELL 1
Du PONT – KENTEC

CH2M HILL

Depth(ft.)

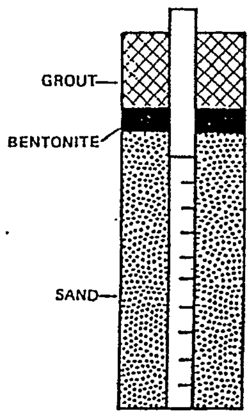
5 —

10 —

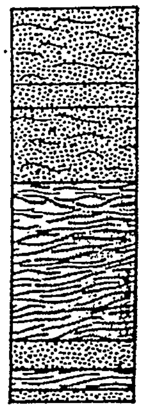
15 —

20 —

Well Construction
(2in. PVC)



Pictorial Log



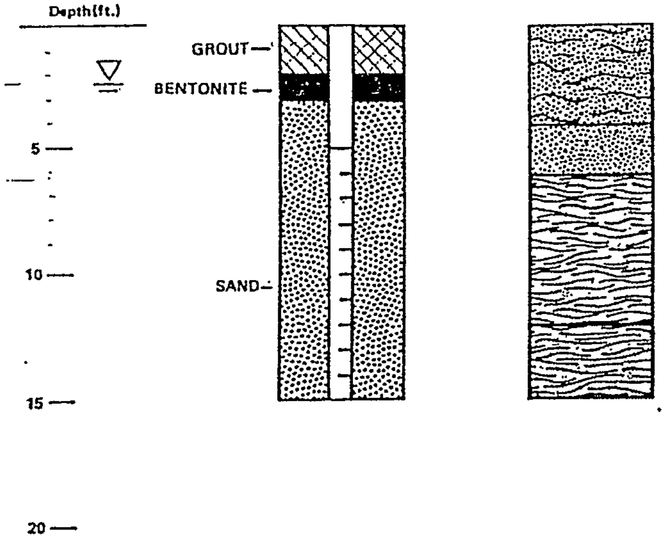
Sample Number	Interval (ft.)	Recovery (in.)	Blow Counts 6"–6"–6"–6"	Written Log	Elevation (ft.)
					30.0
S1	0–1.5	14	2–1–2	Fine sand with some silt, dusky yel. br. (10YR 2/2) gray orange (10YR 7/4) sl. moist.	
S2	3.5–5	15	2–5–8	Fine –m sand, trace silt, yel. orange (10YR 6/6), wet	
				Fine –m silty sand, trace clay, green gray (5G 2/1), sl. plastic, dense, v. moist.	25.0
S3	8.5–10	24	2–6–7	Clayey silt, trace sand, green-black (5G 2/1), sl. plastic, dense, v. moist.	20.0
S4	13.5–15	10	17–29–14	Fine –m. sand with some gravel, grey-green (5GY 4/1), wet.	
				Clayey sandy silt, green-black (5G 2/1), dense, sl. plastic, v. moist.	15.0
S5	14–15.5	24	6–14–15	M–c. sand, gray (N4), wet.	
					10.0

WELL CONSTRUCTION AND GEOLOGIC LOG
MONITORING WELL 2
Du PONT – KENTEC

CH2M HILL

Well Construction (2in. PVC)

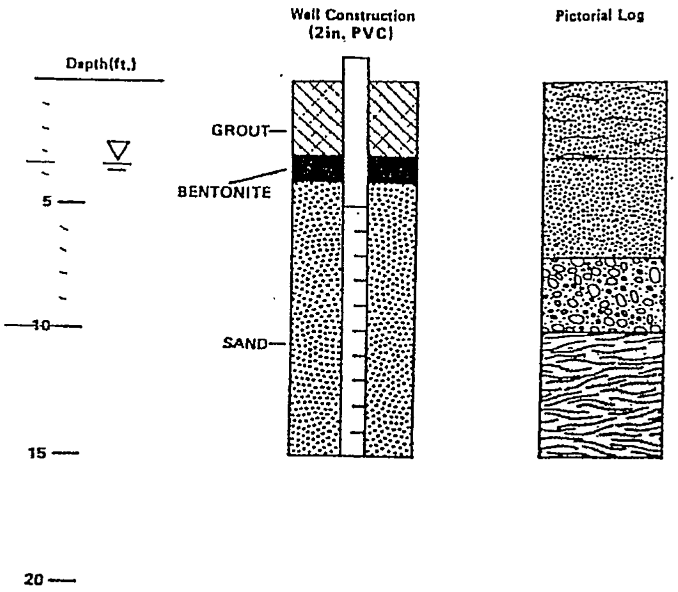
Pictorial Log



Sample Number	Interval (ft.)	Recovery (in.)	Blow Counts 6"–6"–6"–6"	Written Log	Elevation (ft.)
					29.5
				Fine silty sand, yellow orange (10YR 6/6) – gray orange (10YR 7/4) moist-wet.	
S1	3.5 5	17	5 8 9	Fine- c. sand, with some silt, color as above, wet.	24.5
S2	8.5–10	18	3–6–10	Clayey sandy silt, gray (N3), dense, sl. plastic, v. moist.	19.5
S3	13.5–15	18	7–12–12	As above, with more sand, with some glauconite, moist.	14.5
					9.5

WELL CONSTRUCTION AND GEOLOGIC LOG
MONITORING WELL 3
Du PONT – KENTEC

CH2M HILL

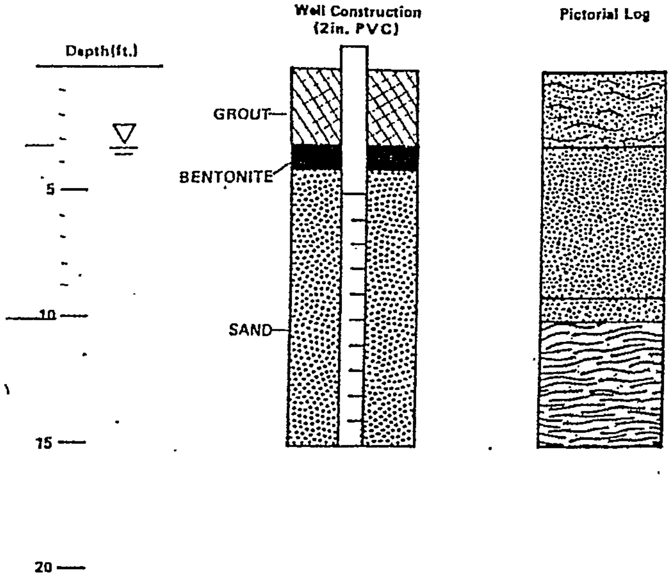


Sample Number	Interval (ft.)	Recovery (in.)	Blow Counts 6"–6"–6"–6"	Written Log
S1	0–1.5	18	3–2–2	Fine silty sand, yell. br. (10YR 4/2)–yell. orange (10YR 6/6), moist.
S2	3.5–5	17	4–5–6	Fine–c. sand, trace silt, yell. orange (10YR 6/6), gray orange (10YR 7/4), wet.
S3	8.5–10	24	3–4–5	M–c. sand with some gravel, gray (N4–N5)–black ((N1), wet.
				Clayey silt with some sand, green black (5G 2/1)–gray (N4), dense, moist-wet.
S4	13 5–15	24	8–10–14	

Elevation (ft.)
30.6
25.6
20.6
15.6
10.6

WELL CONSTRUCTION AND GEOLOGIC LOG
MONITORING WELL 4
Du PONT – KENTEC

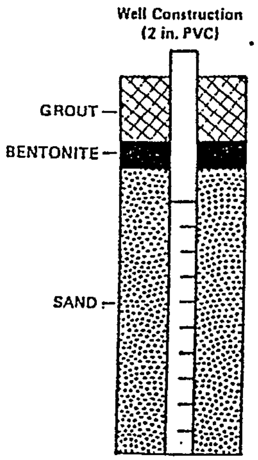
CH2M HILL



Sample Number	Interval (ft.)	Recovery (in.)	Blow Counts 6"–6"–6"–6"	Written Log	Elevation (ft.)
					30.6
S1	0–1.5	24	3–2–2	Fine silty sand, dusky yell. br. (10YR 4/2)–yell. orange (10YR 6/6), moist.	
S2	3.5–5	18	2–2–4		25.6
				M–c. sand, gray orange (10YR 7/4), wet.	
S3	8.5–10	24	2–3–4		
				As above but black (N1), wet.	20.6
				Clayey sandy silt, green black (5G 2/1), wet.	
S4	13.5–15	18	6–8–11		15.6
					10.6

WELL CONSTRUCTION AND GEOLOGIC LOG
MONITORING WELL 5
Du PONT – KENTEC

CH2M HILL

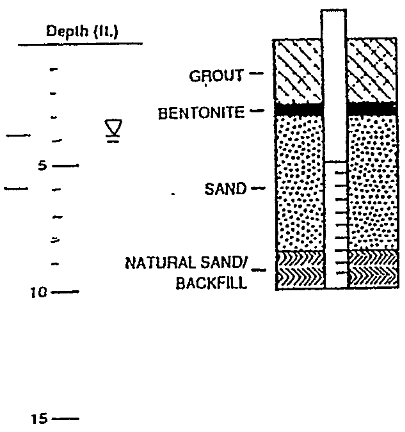


Depth (ft.)	Sample Number	Interval (ft.)	Recovery (in.)	Blow Counts 6"–6"–6"–6"	Written Log	Elevation (ft.)
						28.5
					Fine–c. sand, gray orange (10YR 7/4) wet.	
5	S1	3.5–5	15	7–9–11	Fine–m. silty sand, gray green (5G 6/1), sl. cohesive, wet.	23.5
10	S2	8.5–10	20	7–10–14	Clayey sandy silt, green-black (5G 2/1), sl. plastic, dense, v. moist	18.5
15	S3	13.5–15	18	7–13–18	Silty sand, green black (5G 2/1), wet	13.5
20						8.5

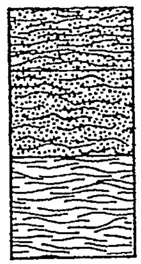
WELL CONSTRUCTION AND GEOLOGIC LOG
MONITORING WELL 6
Du PONT — KENTEC

SAT 22398 B0

Well Construction (2 " PVC)



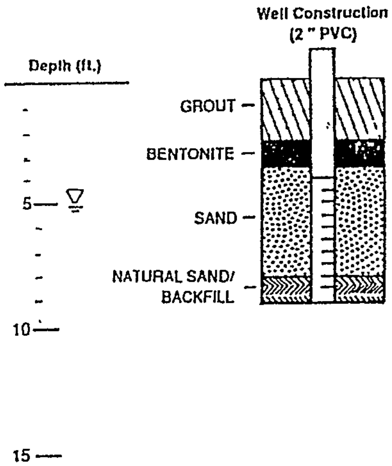
Pictorial Log



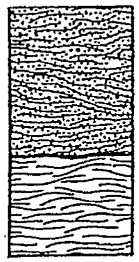
Sample Number	Interval (ft.)	Recovery (in.)	Blow Count 6"-6"-6"	Written Log	Elevation (ft.) 27.9
				Top soil: clayey silty sand, light brown.	25.7
S1	3.5-5	17	6-11-11	Silty fine to medium sand with trace clay, brown (5 YR 3/2) to greenish gray (5 GY 6/1).	21.7
S2	8.5-10	24	11-9-14	Clayey silt, greenish black (5 GY 2/1), moist, sl. plastic.	

WELL CONSTRUCTION AND GEOLOGIC LOG
MONITORING WELL 7
Du PONT - KENTEC

CH2M HILL



Pictorial Log



Sample Number	Interval (ft.)	Recovery (in.)	Blow Count 6"-6"-6"	Written Log	Elevation (ft.)
					29
S1	3.5-5	11	3-4-9	Silty c. sand, dark yellowish orange (10 YR 5/6), wet.	
					23
S2	8.5-10	20	3-5-6	Silty clay with some fine sand, several thin c. sand seams, black (N1), moist, plastic.	

WELL CONSTRUCTION AND GEOLOGIC LOG
MONITORING WELL 8
Du PONT - KENTEC

CH2M HILL

PROJECT: DU PONT KENTEC FACILITY, GRIFTON, NORTH CAROLINA
DRILLER: WESTINGHOUSE ENVIRONMENTAL LOGGER: J. FORD
DRILLING METHOD/EQUIPMENT: MUD ROTARY / SPEEDSTAR
GROUND ELEVATION (FT MSL): 30.4 START DATE: 10/3/89 FINISH DATE: 10/5/89

BORING : MW-4B
PAGE 1 OF 2; 0 ft - 50 ft
CH2M HILL
PROJECT #:SAT 22398.CO

ELEVATION (FT MSL)	DEPTH (FEET)	SAMPLE COLLECTION DATA: INTERVAL (FEET)	SAMPLE NUMBER	RECOVERY (IN)	STANDARD PENETRATION TEST 6"-6"-6"-6" (N)	WRITTEN LOG	SYMBOLIC LOG	WELL CONSTRUCTION 2 Inch PVC
25.4	5					NOTE: REFER TO THE MW-4 LOG IN THE PHASE 2 REPORT FOR SHALLOW LITHOLOGIES		
20.4	10							
15.4	15					6-INCH STEEL CASING TO 15' 2"		
10.4	20							
		22-24	S-1	24	N/A	0-24": VERY FINE CLAYEY SILT, DARK GREENISH GRAY (5G 4/1), CLEAN, MOIST, NON-PLASTIC		GROUT
5.4	25							
		27-29	S-2	24	N/A	0-24": SAME AS S-1		
0.4	30							
		32-34	S-3	24	N/A	0-24": SAME AS S-1		
-4.6	35							
		37-39	S-4	24	N/A	0-24": SAME AS S-1 WITH MORE BANDED SILT AND SAND LAYERS		
-9.6	40							BENT.
		42-44	S-5	24	N/A	0-24": SAME AS S-1		
-14.6	45							SAND
		47-49	S-6	24	N/A	0-21": VERY SANDY CLAY WITH SOME SILT, GRAYISH OLIVE GREEN (5GY3/2), MEDIUM TO COARSE SAND, WET, 21-24": FINE TO MEDIUM UNCONSOLIDATED SAND, DARK YELLOWISH GREEN (10GY3/2)		

PROJECT: DU PONT KENTEC FACILITY ; GRIFTON, NORTH CAROLINA
DRILLER: WESTINGHOUSE ENVIRONMENTAL LOGGER: J. FORD
DRILLING METHOD/EQUIPMENT: MUD ROTARY / SPEEDSTAR
GROUND ELEVATION (FT MSL): 30.4 START DATE: 10/3/89 FINISH DATE: 10/5/89

BORING : MW-4B
PAGE 2 OF 2; 50 ft - 100 ft
CH2M HILL
PROJECT #:SAT 22398.CO

ELEVATION (FT MSL)	DEPTH (FEET)	SAMPLE COLLECTION DATA: INTERVAL (FEET)	SAMPLE NUMBER	RECOVERY (IN)	STANDARD PENETRATION TEST 6"-6"-6"-6" (N)	WRITTEN LOG	SYMBOLIC LOG	WELL CONSTUCTION 2 Inch PVC
-24.6	55	52-54	S-7	24	N/A	0-24": FINE TO MEDIUM UNCONSOLIDATED SAND, DARK YELLOWISH GREEN (10GY 3/2)		SAND
						BORING TERMINATED AT 56.0 FEET		

WELL SUMMARY

GROUT: 0 - 39.0 FT
BENTONITE: 39.0 - 43.0 FT
SAND: 43.0 - 56.0 FT
SCREEN: 46.0 - 56.0 FT

PROJECT: DU PONT KENTEC FACILITY; GRIFTON, NORTH CAROLINA
DRILLER: WESTINGHOUSE ENVIRONMENTAL   LOGGER: J. FORD
DRILLING METHOD/EQUIPMENT: MUD ROTARY / SPEEDSTAR
GROUND ELEVATION (FT MSL): 27.8   START DATE: 10/3/89   FINISH DATE: 10/9/89

BORING : MW-7B
PAGE 1 OF 2; 0 ft - 50 ft
CH2M HILL
PROJECT #:SAT 22398.C0.02

ELEVATION (FT MSL)	DEPTH (FEET)	SAMPLE COLLECTION DATA: INTERVAL (FEET)	SAMPLE NUMBER	RECOVERY (IN)	STANDARD PENETRATION TEST 6"-6"-6"-6" (N)	WRITTEN LOG	SYMBOLIC LOG	WELL CONSTUCTION 2 Inch PVC
22.8	5					NOTE: REFER TO THE MW-7 LOG IN THE PHASE 2 REPORT FOR SHALLOW LITHOLOGIES		
17.8	10					6-INCH STEEL CASING TO 9' 9"		
12.8	15							
		16-18	S-1	24	N/A	0-24":CLAYEY SILT WITH FINE SAND, GREENISH BLACK (5G 2/1), MOIST, SEMI-PLASTIC		
7.8	20							GROUT
		21-23	S-2	24	N/A	0-24":SAME AS S-1		
2.8	25							
		26-28	S-3	24	N/A	0-24":SAME AS S-1		
-2.2	30							
		31-33	S-4	24	N/A	0-24":SAME AS S-1		BENT.
-7.2	35							
		36-38	S-5	24	N/A	0-24":SAME AS S-1		
-12.2	40							
		41-43	S-6	24	N/A	0-24": VERY CLAYEY SAND WITH SOME SILT, GRAYISH OLIVE GREEN (5GY 3/2), WET,COARSE GRAINED		SAND
-17.2	45							
		46-48	S-7	22	N/A	0-24":FINE TO MEDIUM UNCONSOLIDATED SANDS, DARK YELLOWISH GREEN (10GY 3/2)		
						BORING TERMINATED AT 48.0 FEET WELL SUMMARY: GROUT: 0 - 29.5 FT; BENTONITE: 29.5 - 33.5 FT; SAND: 33.5 - 46.0 FT; SCREEN: 36.0 - 46.0 FT		

PROJECT: KENTEC FACILITY ; GRIFTON, NORTH CAROLINA
DRILLER: WESTINGHOUSE ENVIRONMENTAL
LOGGER: STEVEN BROWN
DRILLING METHOD/EQUIPMENT: CME-55 WITH 6 1/4" HSA
GROUND ELEVATION (FT MSL): 30.6
START DATE: 10/4/89
FINISH DATE: 10/5/89

BORING : MW-10

CH2M HILL
PROJECT #:SAT 22398.C0

SAMPLE COLLECTION DATA

ELEVATION (FT MSL)	DEPTH (FEET)	INTERVAL (FEET)	SAMPLE NUMBER	RECOVERY (IN)	STANDARD PENETRATION TEST 6"-6"-6"-6" (N)	WRITTEN LOG	SYMBOLIC LOG	WELL CONSTUCTION 2 Inch PVC
								GROUT
25.6	5	4 - 5.5	S1	22	7-9-10	0-22": MED. TO C. BEACH SAND WITH SOME SILT, DARK YELLOWISH ORANGE (10 YR 6/6), WET, MODERATELY LOOSE		BENTONITE
20.6	10	8.5-10	S2	18	5-5-5	0-10": MED. SAND TO F. PEBBLES, MODERATE YELLOWISH BROWN (10 YR 5/4), WET, LOOSE; 10-18": SILTY SANDY CLAY, GRAYISH OLIVE (10 Y 4/2), WET, STIFF		SAND
15.6	15	13.5-15	S3	20	20-40-45	0-3": SILTY CLAYEY F. TO C. SAND, DARK YELLOWISH ORANGE (10 YR 6/6), MOIST, STIFF; 3-20": CLAYEY SILTY F. TO C. SAND, DARK GRAY (N3), MOIST, V. STIFF		

BORING TERMINATED AT 14 FEET

NOTE: STRONG ODOR DETECTED DURING DRILLING BUT NO MONITORING DETECTIONS

WELL SUMMARY

GROUT: 0 TO 3'
BENTONITE:3' TO 5' 3"
SAND: 5'3" TO 12' 6"
SCREEN: 6' TO 12' 6"

CH2M HILL

PROJECT NUMBER: SAT22398.D0	BORING NO.: MW10B	SHEET: 1 OF 3

SOIL BORING LOG

PROJECT: DUPONT KENTEC
LOCATION: LENOIR CO., NC
ELEVATION: ~30'
DRILLING CONTRACTOR: HARDIN-HUBER INC.
DRILLING METHOD AND EQUIPMENT: 8" HSA & 6" ROTARY W/A FAILING F-7
WATER LEVEL AND DATE: ~8', 7/30/90
START: 7/30/90
FINISH: 8/1/90
LOGGER: A. BRYDA

DEPTH BELOW SURFACE	DEPTH: INTERVAL	DEPTH: TYPE AND NUMBER	REC	STD. PEN. TEST 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOL LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TEST AND INSTRUMENTATION
							AIR MONITORING (AM): OVA AND EXPLOSIMETER. WILL NOTE ANY ABOVE BACKGROUND READINGS
							DRILLING NEXT TO MW10 SEE MW10 BORING LOG FOR SOIL DESCRIPTION
5							
							WATER LEVEL ~8'
10	10-12	S1	1.7	2-2-2-3 (4)	0-3" SILTY SAND, (SC), SAND IS F-M, GRAYISH ORANGE (10YR7/4), WET, VERY LOOSE 3-12" SILT W/ SAND, (ML), SAND IS F., VERY PALE ORANGE TO DARK YELLOW ORANGE (10YR6/6), WET, VERY LOOSE 12-20" SILT W/ SAND, (ML), SAND IS C. W/ SOME CLAY, MOIST, VERY LOOSE		SILT LAYER AT ~11' AM: >100 PPM, 0. SET 6" ID CASING +1 TO 13' SUCCESSFUL PRESSURE TEST OF CASING ON 7/31/90
15	15-17	S2	1.8	15-13--10-13 (23)	0-6" SILTY SAND, (SC), SAND IS M-VC, OLIVE GRAY (5Y3/2), WET, MEDIUM TO DENSE, SOME SHELLS 6-20" SILT W/ SAND, (ML), SAND IS M, OLIVE GRAY (5Y3/2), WET, V. STIFF		
20							

CH2M HILL	PROJECT NUMBER: SAT22398.D0	BORING NO.: MW10B
	SOIL BORING LOG	SHEET: 2 OF 3

PROJECT: DUPONT KENTEC LOCATION: LENOIR CO., NC

ELEVATION: ~30' DRILLING CONTRACTOR: HARDIN-HUBER INC.

DRILLING METHOD AND EQUIPMENT: 8" HSA & 6" ROTARY W/A FAILING F-7

WATER LEVEL AND DATE: ~8', 7/30/90 START: 7/30/90 FINISH: 8/1/90 LOGGER: A. BRYDA

DEPTH BELOW SURFACE	DEPTH: INTERVAL	DEPTH: TYPE AND NUMBER	DEPTH: REC	STD. PEN. TEST 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TEST AND INSTRUMENTATION
20	20-22	S3	2.0	7-8--10-11 (18)	SILT, (ML), OLIVE GRAY (5Y3/2), WET, V. STIFF		
25	25-27	S4	1.4	7-12-20-30 (32)	SIMILAR TO S3 W/ SEVERAL THIN CLAY SEAMS AND SILTY SAND SEAMS, MICACEOUS		
30	30-32	S5	2.0	8-10--12-18 (22)	SIMILAR TO S3, SILT, (ML), OLIVE GRAY (5Y3/2), WET, V. STIFF, SOME CLAY AND F. SAND SEAMS		
35	35-37	S6	2.0	8-10--12-18 (22)	SIMIALR TO S5 ABOVE, SILT, MOIST W/ SEVERAL THIN SILTY F. SAND SEAMS		
40							

CH2M HILL	PROJECT NUMBER: SAT22398.DO	BORING NO.: MW10B	SHEET: 3 OF 3

SOIL BORING LOG

PROJECT: DUPONT KENTEC LOCATION: LENOIR CO., NC
ELEVATION: ~30' DRILLING CONTRACTOR: HARDIN-HUBER INC.
DRILLING METHOD AND EQUIPMENT: 8" HSA & 6" ROTARY W/A FAILING F-7
WATER LEVEL AND DATE: ~8', 7/30/90 START: 7/30/90 FINISH: 8/1/90 LOGGER: A. BRYDA

DEPTH BELOW SURFACE	DEPTH INTERVAL	DEPTH TYPE AND NUMBER	DEPTH REC	STD. PEN. TEST 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TEST AND INSTRUMENTATION
	40-42	S7	2.0	10-12- -7-26 (19)	SIMILAR TO ABOVE, SILT W/ SEVERAL THIN SILTY F. SAND SEAMS		
45	45-47	S8	2.0	8-14- -21-40 (35)	SILTY CLAYEY SAND, (SC-SM), SAND IS M-C., OLIVE GRAY (5Y3/2), WET, DENSE, SOME SHELLS PRESENT		
50	50-52	S9	1.3	21-36- -50-23 (86)	SILTY SAND, (SM), SAND IS M-C., OLIVE GRAY (5Y3/2), WET, DENSE		BLOW COUNTS INDICATE "DENSE" SEDIMENTS, BUT THE SAND IS "LOOSE"
							WELL CONSTRUCTION INFO
							57' TOTAL DEPTH
55	55-57	S10	1.7	24-60- -70-100/ (130)	SAME AS S9, SOME SHELLS		+1-13' 6" STEEL CASING 45-55' 2-INCH SCH 40 PVC, 10 SLOT SCREEN 55-57' NATURAL SAND PACK 42.6-55' #2 MORIE SAND PACK 36.5-42.6' BENTONITE PELLETS SEAL 0-36.5' PORTLAND TYPE I CEMENT GROUT
60							

CH2M HILL

SOIL BORING LOG

PROJECT: DUPONT KENTEC LOCATION: LENOIR CO., NC
ELEVATION: ~32 FT MSL DRILLING CONTRACTOR: HARDIN-HUBER INC.
DRILLING METHOD AND EQUIPMENT: 12" AND 8" MUD ROTARY W/A FAILING F-7
WATER LEVEL AND DATE: 12.2' on 2/21/91 START: 1/23/91 FINISH: 1/31/91 LOGGER: A. BRYDA

DEPTH BELOW SURFACE	DEPTH: INTERVAL	DEPTH: TYPE AND NUMBER	DEPTH: REC	STD. PEN. TEST 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOL	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TEST AND INSTRUMENTATION
					FOR SOIL DESCRIPTION FROM 0-10' SEE BORING LOG MW10A. FOR SOIL DESCRIPTION FROM 15-60' SEE BORING LOG MW10B.		AIR MONITORING (AM): HNU AND EXPLOSIMETER. READINGS ARE BACKGROUND OF THE SPLIT SPOON AND THE BREATHING ZONE UNLESS OTHERWISE NOTED.
5							
10							
	13-15	S1	1.5	6-8-8-14 (16)	SILT W/ SAND, ML, MEDIUM DARK GRAY (N4), STIFF TO V. STIFF, DRY, SAND IS M-VC.		TOP OF THE SILT LAYER IS AT 13' AS DETERMINED BY THE COLOR CHANGE OF THE DRILLING MUD. SET 15' OF 8" STEEL CASING FROM 0-15' (2' INTO THE SILT LAYER). NOTE: ON 1/24 A HYDROSTATIC PRESSURE TEST WAS CONDUCTED ON THE 8" CASING.
15							
20							RIG CHATTER FROM 17 TO 17.5'.

CH2M HILL

PROJECT NUMBER: ATL22398.FC	BORING NO.: MW10C	SHEET: 2 of 6

SOIL BORING LOG

PROJECT: DUPONT KENTEC LOCATION: LENOIR CO., NC
ELEVATION: ~32 FT MSL DRILLING CONTRACTOR: HARDIN-HUBER INC.
DRILLING METHOD AND EQUIPMENT: 12" AND 8" MUD ROTARY W/A FAILING F-7
WATER LEVEL AND DATE: 12.2' on 2/21/91 START: 1/23/91 FINISH: 1/31/91 LOGGER: A. BRYDA

DEPTH BELOW SURFACE	DEPTH: INTERVAL	DEPTH: TYPE AND NUMBER	DEPTH: REC	STD. PEN. TEST 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOL LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TEST AND INSTRUMENTATION
25	25-27	SH-1	1.0	-			
30							
35							
40							

CH2M HILL

PROJECT NUMBER: ATL22398.F0 | BORING NO.: MW10C | SHEET: 3 of 6

SOIL BORING LOG

PROJECT: DUPONT KENTEC | LOCATION: LENOIR CO., NC
ELEVATION: ~32 FT MSL | DRILLING CONTRACTOR: HARDIN-HUBER INC.
DRILLING METHOD AND EQUIPMENT: 12" AND 8" MUD ROTARY W/A FAILING F-7
WATER LEVEL AND DATE: 12.2' on 2/21/91 START: 1/23/91 FINISH: 1/31/91 LOGGER: A. BRYDA

DEPTH BELOW SURFACE	DEPTH: INTERVAL	DEPTH: TYPE AND NUMBER	DEPTH: REC	STD. PEN. TEST 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TEST AND INSTRUMENTATION
45							
50							
55							
60							

CH2M HILL

PROJECT NUMBER: ATL22398.F0	BORING NO.: MW10C	SHEET: 4 of 6

SOIL BORING LOG

PROJECT: DUPONT KENTEC LOCATION: LENOIR CO., NC
ELEVATION: ~32 FT MSL DRILLING CONTRACTOR: HARDIN-HUBER INC.
DRILLING METHOD AND EQUIPMENT: 12" AND 8" MUD ROTARY W/A FAILING F-7
WATER LEVEL AND DATE: 12.2' on 2/21/91 START: 1/23/91 FINISH: 1/31/91 LOGGER: A. BRYDA

DEPTH BELOW SURFACE	DEPTH INTERVAL	TYPE AND NUMBER	REC	STD. PEN. TEST 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TEST AND INSTRUMENTATION
	60-62	S2	1.0	29-28-32 100/5" (60)	WELL GRADED SAND, SW, DUSKY YELLOW GREEN (10GY3/2), MOIST, SAND IS M-C., GLAUCONITIC, SUBROUNDED TO ROUNDED		DRILLER NOTES HARDER DRILLING BETWEEN 55 AND 60'. DRILLING MUD BECAME THICKER. PROBABLY A CLAY LAYER BETWEEN 55 AND 60'.
65	65-67	S3	1.2	20-40-50 -50/5" (90)	SAME AS S2, WET		
70	70-72	S4	0.8	29-100/6	SAME		DRILLER THINS THE MUD.
75	75-77	S5	0.8	100/6'	SAME		
80							

CH2M HILL

PROJECT NUMBER: ATL22398.F0	BORING NO.: MW10C	SHEET: 5 of 6

SOIL BORING LOG

PROJECT: DUPONT KENTEC LOCATION: LENOIR CO., NC
ELEVATION: ~32 FT MSL DRILLING CONTRACTOR: HARDIN-HUBER INC.
DRILLING METHOD AND EQUIPMENT: 12" AND 8" MUD ROTARY W/A FAILING F-7
WATER LEVEL AND DATE: 12.2' on 2/21/91 START: 1/23/91 FINISH: 1/31/91 LOGGER: A. BRYDA

DEPTH BELOW SURFACE	DEPTH: INTERVAL	DEPTH: TYPE AND NUMBER	DEPTH: REC	STD. PEN. TEST 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOL LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TEST AND INSTRUMENTATION
	80-82	S6	1.2	24-84--50/2"	SIMILAR TO ABOVE W/ SLIGHTLY HIGHER CLAY CONTENT		
85	85-87	S7	1.0	44-40--50/3"	SIMILAR TO ABOVE W/ SLIGHTLY HIGHER CLAY CONTENT AND SHELLS		
90	90-92	S8	0	100/5"	NO RECOVERY		RIG CHATTER 90-92' PROBABLY IN THE GRAVEL LAYER.
95	95-97	S9	0.4	72-100/2	WELL GRADED SAND, SW, OLIVE GRAY (5Y3/2), WET, SAND IS M-C.		SOME "TRASH" IN THE SPOON OF GRAVEL AND SHELLS, PROBABLY FROM THE GRAVEL LAYER.
100							

CH2M HILL

PROJECT NUMBER: ATL22398.FC | BORING NO.: MW10C | SHEET: 6 of 6

SOIL BORING LOG

PROJECT: DUPONT KENTEC
LOCATION: LENOIR CO., NC
ELEVATION: ~32 FT MSL
DRILLING CONTRACTOR: HARDIN-HUBER INC.
DRILLING METHOD AND EQUIPMENT: 12" AND 8" MUD ROTARY W/A FAILING F-7
WATER LEVEL AND DATE: 12.2' on 2/21/91
START: 1/23/91
FINISH: 1/31/91
LOGGER: A. BRYDA

DEPTH BELOW SURFACE	DEPTH: INTERVAL	DEPTH: TYPE AND NUMBER	DEPTH: REC	STD. PEN. TEST 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TEST AND INSTRUMENTATION
	100-102	S10	1.0	32-100/6	SAME AS S9		WELL CONSTRUCTION INFO
							102' TOTAL DEPTH
							0-15' 8" SURFACE CASING
							83-93' 20 SLOT 4" SCH 40 PVC SCREEN
							91.5-93' NATURAL PACK
							79-91.5' #1 MORIE SAND PACK (4-100 LBS BAGS)
105							72-79' BENTONITE SLURRY
							0-72' CEMENT GROUT

PROJECT: KENTEC FACILITY ; GRIFTON, NORTH CAROLINA
DRILLER: WESTINGHOUSE ENVIRONMENTAL LOGGER: STEVEN BROWN
DRILLING METHOD/EQUIPMENT: CME-55 WITH 6 1/4" HSA
GROUND ELEVATION (FT MSL): 30.1 START DATE: 10/5/89 FINISH DATE: 10/5/89

BORING : MW-11
PAGE 1 OF 1
CH2M HILL
PROJECT #:SAT 22398.C0

ELEVATION (FT MSL)	DEPTH (FEET)	SAMPLE COLLECTION DATA: INTERVAL (FEET)	SAMPLE NUMBER	RECOVERY (IN)	STANDARD PENETRATION TEST 6"-6"-6"-6" (N)	WRITTEN LOG	SYMBOLIC LOG	WELL CONSTUCTION 2 Inch PVC
								GROUT
25.1	5	3.5-5'	S1	18	5-8-9	0-18": MED. TO C. BEACH SAND WITH VF. TO F. PEBBLES, PALE YELLOWISH BROWN (10 YR 6/2), LOOSE, WET		BENTONITE
								SAND
20.1	10	8.5-10	S2	19	6-10-14	0-3": CLAYEY F. SAND, MODERATE YELLOWISH BROWN (10 YR 5/4), STIFF, MOIST; 3-19": SANDY CLAY, DARK GRAY (N3), SAND IS F. TO MED.,STIFF, MOIST		

BOREHOLE TERMINATED AT 10 FEET

NOTE: STRONG ODOR DETECTED DURING DRILLING BUT NO MONITORING DETECTIONS

WELL SUMMARY

GROUT: 0 TO 3'1"
BENTONITE: 3'1" TO 4'6"
SAND: 4'6" TO 9'
SCREEN: 5'6" TO 9'

CH2M HILL

PROJECT NUMBER: ATL22398.FO	BORING NO.: MW11B	SHEET: 1 of 3

SOIL BORING LOG

PROJECT: DUPONT KENTEC
LOCATION: LENOIR CO., NC
ELEVATION: ~30 FT MSL
DRILLING CONTRACTOR: HARDIN-HUBER INC.
DRILLING METHOD AND EQUIPMENT: 12" AND 8" MUD ROTARY W/A FAILING F-7
WATER LEVEL AND DATE: 11.9' on 2/21/91
START: 1/21/91
FINISH: 1/29/91
LOGGER: A. BRYDA

DEPTH BELOW SURFACE	DEPTH: INTERVAL	DEPTH: TYPE AND NUMBER	DEPTH: REC	STD. PEN. TEST 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TEST AND INSTRUMENTATION
					FOR SOIL DESCRIPTION FROM 0-10' SEE BORING LOG MW11A. FOR SOIL DESCRIPTION FROM 15-60' SEE BORING LOG MW11C.		AIR MONITORING (AM): HNU AND EXPLOSIMETER. READINGS ARE BACKGROUND OF SPLIT SPOONS AND THE BREATHING ZONE UNLESS OTHERWISE NOTED.
5							
10							
	13-15	S1	1	2-4-4-5 (8)	0-6" LEAN CLAY W/ SAND, CL, MODERATE YELLOW BROWN (10R5/4), FIRM TO STIFF, MOIST 6-12" LEAN CLAY W/ SAND, CL, MEDIUM GRAY (N5), FIRM TO STIFF, DRY, SAND IS C.		
15							SET 16' OF 8" STEEL SURFACE CASING (+1 TO 15') THEN PUSHED THE CASING 0.5' DOWN INTO THE LOW PERMEABLE UNIT. NOTE: ON 1/24 A HYDROSTATIC PRESSURE TEST WAS COMPLETED ON THE 8" CASING.
20							

CH2M HILL

PROJECT NUMBER:ATL22398.FO	BORING NO.: MW11B	SHEET: 2 of 3

SOIL BORING LOG

PROJECT: DUPONT KENTEC LOCATION: LENOIR CO., NC
ELEVATION: -30 FT MSL DRILLING CONTRACTOR: HARDIN-HUBER INC.
DRILLING METHOD AND EQUIPMENT: 12" AND 8" MUD ROTARY W/A FAILING F-7
WATER LEVEL AND DATE: 11.9' on 2/21/91 START: 1/21/91 FINISH: 1/29/91 LOGGER: A. BRYDA

DEPTH BELOW SURFACE	DEPTH: INTERVAL	DEPTH: TYPE AND NUMBER	DEPTH: REC	STD. PEN. TEST 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TEST AND INSTRUMENTATION
25							
30							
35							
40							

CH2M HILL	PROJECT NUMBER: ATL22398.F0	BORING NO.: MW11B	SHEET: 3 of 3

SOIL BORING LOG

PROJECT: DUPONT KENTEC LOCATION: LENOIR CO., NC
ELEVATION: ~30 FT MSL DRILLING CONTRACTOR: HARDIN-HUBER INC.
DRILLING METHOD AND EQUIPMENT: 12" AND 8" MUD ROTARY W/A FAILING F-7
WATER LEVEL AND DATE: 11.9' on 2/21/91 START: 1/21/91 FINISH: 1/29/91 LOGGER: A. BRYDA

DEPTH BELOW SURFACE	DEPTH: INTERVAL	DEPTH: TYPE AND NUMBER	REC	STD. PEN. TEST 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOL LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TEST AND INSTRUMENTATION
45							
50							
55							WELL CONSTRUCTION INFO
							60' TOTAL DEPTH
							0-15.5' 8" SURFACE CASING
							48.5-58.5' 20 SLOT 4" SCH 40 PVC SCREEN
							46-58' #1 MORIE SAND PACK (6-100 LBS BAGS)
							34-46' BENTONITE SLURRY
							0-34' CEMENT GROUT
60							

CH2M HILL

PROJECT NUMBER: ATL22398.F0 | BORING NO.: MW11C | SHEET: 1 of 6

SOIL BORING LOG

PROJECT: DUPONT KENTEC
LOCATION: LENOIR CO., NC
ELEVATION: ~30 FT MSL
DRILLING CONTRACTOR: HARDIN-HUBER INC.
DRILLING METHOD AND EQUIPMENT: 12" AND 8" MUD ROTARY W/A FAILING F-7
WATER LEVEL AND DATE: 12.1' on 2/21/91 START: 1/22/91 FINISH: 1/29/91 LOGGER: A. BRYDA

DEPTH BELOW SURFACE	DEPTH: INTERVAL	DEPTH: TYPE AND NUMBER	DEPTH: REC	STD. PEN. TEST 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TEST AND INSTRUMENTATION
					FOR SOIL DESCRIPTION FROM 0-15' SEE BORING LOG MW11A AND MW11B.		AIR MONITORING (AM): HNU AND EXPLOSIMETER. READINGS ARE BACKGROUND OF THE SPLIT SPOON AND THE BREATHING ZONE UNLESS OTHERWISE NOTED.
5							
10							
15							SET 15' OF 8" STEEL CASING FROM 0-15' (2' INTO THE SILT LAYER). NOTE: ON 1/24 A HYDROSTATIC PRESSURE TEST WAS CONDUCTED ON THE 8" CASING.
	18-20	S1	0.7	22-100/4	SILTY SAND, SM, MEDIUM GRAY (N5), V. DENSE, MOIST, SAND IS M-C.		CIRCULATION LOSS AT 16'. CUTTINGS WERE C. SAND AND FINE GRAVEL.
20							

CH2M HILL

PROJECT NUMBER:ATL22398.FO | BORING NO.: MW11C | SHEET: 2 of 6

SOIL BORING LOG

PROJECT: DUPONT KENTEC LOCATION: LENOIR CO., NC
ELEVATION: ~30 FT MSL DRILLING CONTRACTOR: HARDIN-HUBER INC.
DRILLING METHOD AND EQUIPMENT: 12" AND 8" MUD ROTARY W/A FAILING F-7
WATER LEVEL AND DATE: 12.1' on 2/21/91 START: 1/22/91 FINISH: 1/29/91 LOGGER: A. BRYDA

DEPTH BELOW SURFACE	DEPTH: INTERVAL	DEPTH: TYPE AND NUMBER	DEPTH: REC	STD. PEN. TEST 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOL LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TEST AND INSTRUMENTATION
	23-25	S2	2.0	14-10--18-23 (28)	SILT W/ SAND, ML, MEDIUM GRAY (N5), V. STIFF, DRY, SAND IS F. AND GLAUCONITIC		
25							
	28-30	SH-1	1.0	-			COULD ONLY PUSH THE SHELBY TUBE 1.0'
30							
	33-35	S3	2.0	8-14--22-20 (36)	SAME AS S2		
35							
	38-40	S4	2.0	16-18--23-23 (41)	SIMILAR TO S2. DRY W/ INTERLAYERED F. SAND, CLAY, AND SILT SEAMS. THESE SEAMS ARE NO MORE THAN 2" THICK		
40							

CH2M HILL

PROJECT NUMBER: ATL22398.F0	BORING NO.: MW11C	SHEET: 3 of 6

SOIL BORING LOG

PROJECT: DUPONT KENTEC LOCATION: LENOIR CO., NC
ELEVATION: ~30 FT MSL DRILLING CONTRACTOR: HARDIN-HUBER INC.
DRILLING METHOD AND EQUIPMENT: 12" AND 8" MUD ROTARY W/A FAILING F-7
WATER LEVEL AND DATE: 12.2' on 2/21/91 START: 1/22/91 FINISH: 1/29/91 LOGGER: A. BRYDA

DEPTH BELOW SURFACE	DEPTH: INTERVAL	DEPTH: TYPE AND NUMBER	DEPTH: REC	STD. PEN. TEST 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOL LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TEST AND INSTRUMENTATION
	43-45	S5	2.0	10-17--23-34 (40)	SIMILAR TO ABOVE W/ A 10" FINE SANDY CLAY SEAM ABOVE 3" OF M. GLAUCONITIC SAND		
45							
	48-50	S6	1.2	4-5-8-11 (13)	0-5" SAME AS ABOVE 5-14" SILTY SAND, SM, DARK GREENISH GRAY (5GY4/1), MEDIUM, WET, SAND IS M-C., GLAUCONITIC, MICACEOUS, AND SOME SHELLS		
50							
	53-55	S7	1.1	50-100/3	SAME AS S6 5-14"		
55							
	58-60	S8	1.0	50-100/3	SAME AS ABOVE, V. GLAUCONITIC		
60							

SOIL BORING LOG

PROJECT: DUPONT KENTEC LOCATION: LENOIR CO., NC
ELEVATION: ~30 FT MSL DRILLING CONTRACTOR: HARDIN-HUBER INC.
DRILLING METHOD AND EQUIPMENT: 12" AND 8" MUD ROTARY W/A FAILING F-7
WATER LEVEL AND DATE: 12.1' on 2/21/91 START: 1/22/91 FINISH: 1/29/91 LOGGER: A. BRYDA

DEPTH BELOW SURFACE	DEPTH INTERVAL	TYPE AND NUMBER	REC	STD. PEN. TEST 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TEST AND INSTRUMENTATION
	63-65	S9	1.2	34-50-80-100/3 (130)	SIMILAR TO ABOVE S6 5-14", LESS SILT		
65							
	68-70	S10	0.4	23-56--100/3"	SAME		
70							
	73-75	S11	0.5	28-70--50/2"	SAME		
75							STOPPED AT 75' ON 1/25/91 STARTED AT 75' ON 1/26/91
	78-80	S12	2.0	32-66--50/3"	0-14" POORLY GRADED SAND, SP, OLIVE GRAY (5Y3/2), WET, SAND IS F-M., GLAUCONITIC W/ TRACE SHELLS 14-24" SAME AS S6 5-14", SILTY SAND, SM, OLIVE GRAY (5Y3/2), WET, GLAUCONITIC SAND W/ TRACE SHELLS		
80							

CH2M HILL	PROJECT NUMBER: ATL22398.F0	BORING NO.: MW11C	SHEET: 5 of 6
	SOIL BORING LOG		

PROJECT: DUPONT KENTEC LOCATION: LENOIR CO., NC
ELEVATION: ~30 FT MSL DRILLING CONTRACTOR: HARDIN-HUBER INC.
DRILLING METHOD AND EQUIPMENT: 12" AND 8" MUD ROTARY W/A FAILING F-7
WATER LEVEL AND DATE: 12.2' on 2/21/91 START: 1/22/91 FINISH: 1/29/91 LOGGER: A. BRYDA

DEPTH BELOW SURFACE	DEPTH: INTERVAL	DEPTH: TYPE AND NUMBER	DEPTH: REC	STD. PEN. TEST 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOL LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TEST AND INSTRUMENTATION
	83-85	S13	1.8	56-100/6	0-8" SILT W/ SAND, ML, OLIVE GRAY (5Y3/2), SL. MOIST, SAND IS F. AND GLAUCONITIC 8-22" SILT, ML, OLIVE GRAY (5Y3/2), SL. MOIST, GLAUCONITIC AND SOME SHELLS		
85							
	88-90	S14	1.2	30-65--50/2"	SILTY SAND, SM, OLIVE GRAY (5Y3/2), WET, GLAUCONITIC W/ SHELLS SAND IS F-C.		
90							
	93-95	S15	0.5	100/3"	POORLY GRADED GRAVEL W/ SAND AND SILT, GP-GM, OLIVE GRAY (5Y3/2), WET, SAND IS C-VC., GRAVEL IS VF., MICACEOUS, GLAUCONITIC, AND SHELLY, SAND AND GRAVEL ARE ROUNDED TO SUBANGULAR.		ROUGH DRILLING ACTION, SOME LOSS OF CIRCULATION.
95							
100							

CH2M HILL

PROJECT NUMBER: ATL22398.F0	BORING NO.: MW11C	SHEET: 6 of 6

SOIL BORING LOG

PROJECT: DUPONT KENTEC
LOCATION: LENOIR CO., NC
ELEVATION: ~30 FT MSL
DRILLING CONTRACTOR: HARDIN-HUBER INC.
DRILLING METHOD AND EQUIPMENT: 12" AND 8" MUD ROTARY W/A FAILING F-7
WATER LEVEL AND DATE: 12.1' on 2/21/91 START: 1/22/91 FINISH: 1/29/91 LOGGER: A. BRYDA

DEPTH BELOW SURFACE	DEPTH INTERVAL	DEPTH TYPE AND NUMBER	DEPTH REC	STD. PEN. TEST 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TEST AND INSTRUMENTATION
	100-102	S16	0.8	20-100/4	SAME AS S15 SL. MORE SILT		WELL CONSTRUCTION INFO
							102' TOTAL DEPTH
							0-15' 8" SURFACE CASING
							87-97' 20 SLOT 4" SCH 40 PVC SCREEN
							84-97' #1 MORIE SAND PACK (5-100 LBS BAGS)
105							77-84' BENTONITE SLURRY
							0-77' CEMENT GROUT

PROJECT: KENTEC FACILITY ; GRIFTON, NORTH CAROLINA
DRILLER: WESTINGHOUSE ENVIRONMENTAL LOGGER: STEVEN BROWN
DRILLING METHOD/EQUIPMENT: CME-55 WITH 6 1/4" HSA
GROUND ELEVATION (FT MSL): 27.5 START DATE: 10/5/89 FINISH DATE: 10/5/89

BORING : MW-12
PAGE 1 OF 1
CH2M HILL
PROJECT #:SAT 22398.C0

ELEVATION (FT MSL)	DEPTH (FEET)	SAMPLE COLLECTION DATA: INTERVAL (FEET)	SAMPLE NUMBER	RECOVERY (IN)	STANDARD PENETRATION TEST 6"-6"-6"-6" (N)	WRITTEN LOG	SYMBOLIC LOG	WELL CONSTUCTION 2 Inch PVC
								GROUT
22.5	5	4-5.5	S1	18	13-9-10	0-6": SILTY CLAY, PALE YELLOWISH BROWN (10 YR 6/2), STIFF, MOIST; 6-18": F. TO MED. CLEAN BEACH SAND, GRAYISH ORANGE (10 YR 7/4), WET, LOOSE		BENTONITE
								SAND
17.5	10	9-10.5	S2	22	10-19-21	0-2": CLAYEY F. TO MED. SAND, PALE YELLOWISH BROWN (10 YR 6/2), STIFF, MOIST; 2-22": SANDY CLAY, DARK GRAY (N3), SAND IS F. TO MED., STIFF, MOIST		
						BORING TERMINATED AT 11 FEET		

WELL SUMMARY

GROUT: 0 TO 2'10"
BENTONITE: 2'10" TO 5'
SAND: 5' TO 9'6"
SCREEN: 6'3" TO 9'6"

PROJECT: KENTEC FACILITY ; GRIFTON, NORTH CAROLINA
DRILLER: WESTINGHOUSE ENVIRONMENTAL LOGGER: STEVEN BROWN
DRILLING METHOD/EQUIPMENT: CME-55 WITH 6 1/4" HSA
GROUND ELEVATION (FT MSL): 27.1 START DATE: 10/6/89 FINISH DATE: 10/6/89

BORING : MW-13
PAGE 1 OF 1
CH2M HILL
PROJECT #:SAT 22398.C0

ELEVATION (FT MSL)	DEPTH (FEET)	SAMPLE COLLECTION DATA				WRITTEN LOG	SYMBOLIC LOG	WELL CONSTUCTION 2 INCH PVC FLUSH MOUNT
		INTERVAL (FEET)	SAMPLE NUMBER	RECOVERY (IN)	STANDARD PENETRATION TEST 6"-6"-6"-6" (N)			
								GROUT
								BENTONITE
22.1	5	3.5-5	S1	6	11-9-7	0-6": SILTY F. TO VC. SAND WITH VF. TO F. PEBBLES, PALE YELLOWISH BROWN (10 YR 6/2) TO LIGHT BROWN (10 YR 5/6), WET, LOOSE WHERE COARSE, STIFF WHERE SILTY		SAND
		8.5-10	S2	20	30-32-45	0-20": VERY SANDY CLAY, DARK GRAY (N3), MOIST, STIFF		
17.1	10							

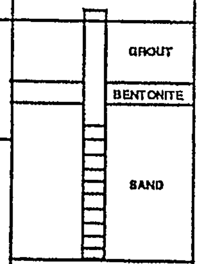
BOREHOLE TERMINATED AT 9 FEET

WELL SUMMARY

GROUT: 0 TO 3'
BENTONITE: 3' TO 4'6"
SAND: 4'6" TO 8'10"
SCREEN: 5'8" TO 8'10"

PROJECT: KENTEC FACILITY ; GRIFTON, NORTH CAROLINA
DRILLER: WESTINGHOUSE ENVIRONMENTAL LOGGER: STEVEN BROWN
DRILLING METHOD/EQUIPMENT: CME-55 WITH 6 1/4" HSA
GROUND ELEVATION (FT MSL): 25.4 START DATE: 1/24/90 FINISH DATE: 1/24/90

BORING : MW-14A
PAGE 1 OF 1
CH2M HILL
PROJECT #:SAT 22398.C0

ELEVATION (FT MSL)	DEPTH (FEET)	SAMPLE COLLECTION DATA				WRITTEN LOG	SYMBOLIC LOG	WELL CONSTUCTION 2 INCH PVC
		INTERVAL (FEET)	SAMPLE NUMBER	RECOVERY (IN)	STANDARD PENETRATION TEST 6"-6"-6"-6" (N)			
20.4	5					NOTE: MW-14A LITHOLOGIES GIVEN IN MW-14B LOG. MW-14B IS 6 FEET AWAY SO MW-14A WAS NOT LOGGED		
15.4	10							

WELL SUMMARY

GROUT: 0 TO 2'1"
BENTONITE: 2'1" TO 2'9"
SAND: 2'9" TO 8'1"
SCREEN: 3'6" TO 8'0"
TOTAL BOREHOLE DEPTH: 8'1"

PROJECT: KENTEC FACILITY ; GRIFTON, NORTH CAROLINA
DRILLER: WESTINGHOUSE ENVIRONMENTAL LOGGER: STEVEN BROWN
DRILLING METHOD/EQUIPMENT: CME-55 WITH 6 1/4" HSA
GROUND ELEVATION (FT MSL): 25.3 START DATE: 1/24/90 FINISH DATE: 1/26/90

BORING : MW-14B

CH2M HILL
PROJECT #:SAT 22398.C0

ELEVATION (FT MSL)	DEPTH (FEET)	SAMPLE COLLECTION DATA: INTERVAL (FEET)	SAMPLE NUMBER	RECOVERY (IN)	STANDARD PENETRATION TEST 6"-6"-6"-6" (N)	WRITTEN LOG	SYMBOLIC LOG	WELL CONSTUCTION 2 INCH PVC
20.3	5	3.5-5	S1	22	3-2-3	0-2": FINE TO COARSE SAND, MODERATE YELLOWISH BROWN (10 YR 5/4), LOOSE, MOIST; 2-4": SANDY SILT, MODERATE YELLOWISH BROWN (10 YR 5/4), STIFF, MOIST; 4-22": SANDY SILT WITH SOME CLAY, DARK GREY (N3), STIFF, MOIS T		
15.3	10	8.5-10	S2	21	4-5-11	0-10": SAME AS S1, 4-22" INTERVAL, SAND IS VERY FINE TO FINE; 10-21": CLAYEY SILT WITH SOME VERY FINE SAND, DARK GREY (N3), STIFF, MOIST NOTE: 6-INCH CASING TO 9 FT BLS		
10.3	15	13.5-15	S3	18	11-10-17	0-10": SAME AS S2, 0-10" INTERVAL; 10-18": SAME AS S2, 10-21" INTERVAL		GROUT
5.3	20	18.5-20	S4	20	11-14-17	0-20": SAME AS S2, 10-21" INTERVAL		
0.3	25	23.5-25	S5	22	19-24-50(5")	0-22": SAME AS S2, 0-10" INTERVAL BUT SOME FINE (1-2 MM) STRINGERS OF SAND AND CLAY EVIDENT, SAMPLE IS GLAUCONITIC		
-4.7	30	28.5-30	S6	13	18-32-50(5 1/2")	0-13": SAME AS S5		CAVE-IN
-9.7	35	33.5-35	S7	21	13-19-27	0-21": SAME AS S5		BENTONITE
-14.7	40	38.5-40	S8	18	16-24-34	0-10": SILTY FINE TO COARSE SAND WITH SHELL FRAGMENTS, DARK GREY (N3), GLAUCONITIC, STIFF, MOIST; 10-14": SILTY FINE TO VERY COARSE SAND WITH SOME 2-4 MM PEBBLES (5%), FIRM, MOIST; 14-18": LIKE 0-10" INTERVAL BUT MODERATELY LOOSE		SAND
-19.7	45	43.5-45	S9	12	50(6") - 50(3")	0-8": MEDIUM TO VERY COARSE SAND WITH SOME SMALL LIMESTONE AND SHELL FRAGMENTS AND VERY FINE PEBBLES, DARK GREY (N3), GLAUCONITIC, LOOSE, WET; 8-12": MEDIUM TO VERY COARSE CLAYEY SAND, DARK GREY (N3), CLAY IS GREENISH GREY, GLAUCONITIC, SOFT TO FIRM		
		48.5-50	S10	0	50 (1")	NO RECOVERY. DRILLER REPORTS THAT DRILLING ACTION AND CUTTINGS ARE SIMILAR TO WHAT WAS OBSERVED DURING DRILLING OF S9 INTERVAL		

PROJECT: KENTEC FACILITY ; GRIFTON, NORTH CAROLINA
DRILLER: WESTINGHOUSE ENVIRONMENTAL LOGGER: STEVEN BROWN
DRILLING METHOD/EQUIPMENT: CME-55 WITH 6 1/4" HSA
GROUND ELEVATION (FT MSL): 25.3 START DATE: 1/24/90 FINISH DATE: 1/26/90

CH2M HILL
PROJECT #:SAT 22398.C0

ELEVATION (FT MSL)	DEPTH (FEET)	SAMPLE COLLECTION DATA: INTERVAL (FEET)	SAMPLE NUMBER	RECOVERY (IN)	STANDARD PENETRATION TEST 6"-6"-6"-6" (N)	WRITTEN LOG	SYMBOLIC LOG	WELL CONSTUCTION 2 INCH PVC
		52-53	S11	11	29-50 (4")	0-11": SILTY FINE TO VERY COARSE SAND,WITH SHELL AND LIMESTONE FRAGMENTS AND VERY FINE PEBBLES OF QUARTZ AND INDURATED MUDSTONE, DARK GREY (N3), SOFT TO LOOSE, WET		SAND CAVE-IN
-29.7	55							

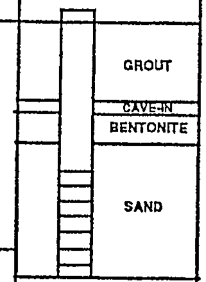
WELL SUMMARY

GROUT: 0 TO 25'
CAVE-IN: 25' TO 31'
BENTONITE: 31' TO 34'10"
SAND: 34'10" TO 50'6"
SCREEN: 40'6" TO 50'6"
CAVE-IN: 50'6" TO 52'
TOTAL BOREHOLE DEPTH: 52'

PROJECT: KENTEC FACILITY ; GRIFTON, NORTH CAROLINA
DRILLER: WESTINGHOUSE ENVIRONMENTAL LOGGER: STEVEN BROWN
DRILLING METHOD/EQUIPMENT: CME-55 WITH 6 1/4" HSA
GROUND ELEVATION (FT MSL): 26.2 START DATE: 1/24/90 FINISH DATE: 1/25/90

BORING : MW-15
PAGE 1 OF 1
CH2M HILL
PROJECT #:SAT 22398.C0

ELEVATION (FT MSL)	DEPTH (FEET)	SAMPLE COLLECTION DATA: INTERVAL (FEET)	SAMPLE NUMBER	RECOVERY (IN)	STANDARD PENETRATION TEST 6"-6"-6"-6" (N)	WRITTEN LOG	SYMBOLIC LOG	WELL CONSTUCTION 2 INCH PVC
		3.5-5	S1	21	12-13-10	0-5": FINE SILTY SAND, DARK YELLOWISH BROWN (10 YR 4/2), FIRM, MOIST; 5-13": SILTY VERY FINE TO FINE SAND, STIFF, MOIST; 13-21": COARSE TO VERY COARSE BEACH SAND, CLEAN, LOOSE, WET, CONTAINS SOME SHELL FRAGMENTS		
21.2	5							
		8.5-10	S2	12	6-8-12	0-12": CLAYEY SILT WITH SOME SAND, DARK GREY (N3), SAND IS VERY FINE, STIFF, MOIST		
16.2	10							



WELL SUMMARY

GROUT: 0 TO 2'6"
CAVE-IN: 2'6" TO 3'
BENTONITE: 3'0" TO 4'0"
SAND: 4'0" TO 8'6"
SCREEN: 4'10" TO 8'6"
TOTAL BOREHOLE DEPTH: 8'6"

PROJECT: KENTEC FACILITY ; GRIFTON, NORTH CAROLINA
DRILLER: WESTINGHOUSE ENVIRONMENTAL LOGGER: STEVEN BROWN
DRILLING METHOD/EQUIPMENT: CME-55. WITH 6 1/4" HSA
GROUND ELEVATION (FT MSL): 29.5 START DATE: 1/23/90 FINISH DATE: 1/23/90

BORING : MW-16
PAGE 1 OF 1
CH2M HILL
PROJECT #:SAT 22398.C0

ELEVATION (FT MSL)	DEPTH (FEET)	SAMPLE COLLECTION DATA: INTERVAL (FEET)	SAMPLE NUMBER	RECOVERY (IN)	STANDARD PENETRATION TEST 6"-6"-6"-6" (N)	WRITTEN LOG	SYMBOLIC LOG	WELL CONSTUCTION 2 INCH PVC FLUSH MOUNT
								GROUT
24.5	5	3.5-5	S1	18	3-3-3	0-18": MEDIUM SAND, DARK YELLOWISH ORANGE (10 YR 6/6), WELL SORTED, LOOSE, WET		BENTONITE
19.5	10	8-9.5	S2	17	3-2-2	0-7": SAME AS S1; 7-10": MEDIUM TO VERY COARSE SAND, LIGHT BROWN (5 YR 5/6), WITH 3-4 MM PEBBLES AT BASE, LOOSE, WET; 10-17": SANDY SILT, DARK YELLOWISH ORANGE (10 YR 6/6), SAND IS FINE TO MEDIUM, FIRM, MOIST		SAND
		13-14.5	S3	9	7-13-19	0-9": VERY SANDY SILT, DARK GREY (N3), STIFF, MOIST		NATURAL BACKFILL
14.5	15							

WELL SUMMARY

GROUT: 0 TO 3'8"
BENTONITE: 3'8' TO 5'0"
SAND: 5'0" TO 10'0"
SCREEN: 6'4" TO 9'10"
NATURAL BACKFILL: 10' TO 12'9"
TOTAL DEPTH: 12'9"

CH2M HILL	PROJECT NUMBER: ATL22398.FO
BORING NO.: MW17C	SHEET: 1 of 6

SOIL BORING LOG

PROJECT: DUPONT KENTEC LOCATION: LENOIR CO., NC
ELEVATION: -30 FT MSL DRILLING CONTRACTOR: HARDIN-HUBER INC.
DRILLING METHOD AND EQUIPMENT: 12" AND 8" MUD ROTARY W/A FAILING F-7
WATER LEVEL AND DATE: 12.1' on 2/21/91 START: 1/23/91 FINISH: 2/5/91 LOGGER: A. BRYDA

DEPTH BELOW SURFACE	DEPTH: INTERVAL	DEPTH: TYPE AND NUMBER	DEPTH: REC	STD. PEN. TEST 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TEST AND INSTRUMENTATION
							AIR MONITORING (AM): HNU AND EXPLOSIMETER. READINGS ARE BACKGROUND OF THE SPLIT SPOON AND THE BREATHING ZONE UNLESS OTHERWISE NOTED.
5							
10							COLOR CHANGE IN THE DRILLING MUD AT 10'
	11-13	S1	1.8	6-12--10-16 (22)	SILT W/ SAND, ML, MEDIUM DARK GRAY (N4), V. STIFF, DRY, SAND IS M-C.		
							SET 13' OF 8" STEEL CASING FROM 0-13' (2 TO 3' INTO THE SILT LAYER).
15	15-17	S2	1.7	9-11--20-20 (31)	WELL GRADED SAND W/ CLAY, SW-SC, GRAYISH OLIVE (10Y4/2), WET, DENSE, SAND IS C. AND ROUNDED.		NOTE: ON 1/24 A HYDROSTATIC PRESSURE TEST WAS CONDUCTED ON THE 8" CASING.
							SAMPLE S2 HNU 2PPM
20							

CH2M HILL

PROJECT NUMBER: ATL22398.F0	BORING NO.: MW17C	SHEET: 2 of 6

SOIL BORING LOG

PROJECT: DUPONT KENTEC LOCATION: LENOIR CO., NC
ELEVATION: ~30 FT MSL DRILLING CONTRACTOR: HARDIN-HUBER INC.
DRILLING METHOD AND EQUIPMENT: 12" AND 8" MUD ROTARY W/A FAILING F-7
WATER LEVEL AND DATE: 12.1' on 2/21/91 START: 1/23/91 FINISH: 2/5/91 LOGGER: A. BRYDA

DEPTH BELOW SURFACE	DEPTH: INTERVAL	DEPTH: TYPE AND NUMBER	REC	STD. PEN. TEST 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOL LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TEST AND INSTRUMENTATION
	20-22	S3	1.9	6-12--14-12 (26)	SILT W/ SAND, ML, GRAYISH OLIVE (10Y4/2), V. STIFF, DRY, SAND IS F-M.		SAMPLE S3 HNU IS 3 PPM
25	25-27	S4	2.0	10-15--19-29 (34)	WELL GRADED SAND W/ SILT, SW-SM, GRAYISH OLIVE (10Y4/2), DENSE, MOIST, SAND IS F-M, GLAUCONITIC AND MICACEOUS		SAMPLE S4 HNU IS 2.5 PPM
30	30-32	SH-1	1.5	-			
35	35-37	S5	1.9	12-22--35-40 (57)	0-12" SAME AS S4 12-23" VARVED CLAY AND SAND, DRY, SAND IS FINE AND GLAUCONITIC		SAMPLE S5 HNU IS 1.8 PPM DRILLER CHANGES MUD
40							

CH2M HILL	PROJECT NUMBER: ATL22398.F0	BORING NO.: MW17C	SHEET: 3 of 6

SOIL BORING LOG

PROJECT: DUPONT KENTEC LOCATION: LENOIR CO., NC
ELEVATION: ~30 FT MSL DRILLING CONTRACTOR: HARDIN-HUBER INC.
DRILLING METHOD AND EQUIPMENT: 12" AND 8" MUD ROTARY W/A FAILING F-7
WATER LEVEL AND DATE: 12.1' on 2/21/91 START: 1/23/91 FINISH: 2/5/91 LOGGER: A. BRYDA

DEPTH BELOW SURFACE	DEPTH: INTERVAL	DEPTH: TYPE AND NUMBER	DEPTH: REC	STD. PEN. TEST 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOL LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TEST AND INSTRUMENTATION
	40-42	S6	2.0	12-13- -18-19 (31)	SILT W/ SAND, ML, OLIVE GRAY (5Y3/2), HARD, DRY, SAND IS F. AND IS IN THIN SEAMS		SAMPLE S6 HNU IS 1.8 PPM
45	45-47	S7	2.0	13-19- -35-42 (54)	0-10" SAME AS ABOVE 10-24" POORLY GRADED SAND W/ SILT, SP-SM, OLIVE GRAY (5Y3/2), WET, SAND IS M-C. GLAUCONITIC W/ SHELLS AND SOME F. GRAVEL		
50	50-52	S8	1.9	13-25- -42-52 (67)	SAME AS S7 10-24"		HYDRAULIC LINE ON DRILL RIG RUPTURES AFTER OBTAINING S8. STOP DRILLING ON 1/31/91. CONTINUE DRILLING ON 2/4/91 AFTER MOVING THE RIG OFF THE BOREHOLE AND DECONNING EVERYTHING AND CHANGING THE DRILLING MUD.
55	55-57	S9	1.2	16-48- -56-70 (104)	POORLY GRADED SAND W/ SILT, SP-SM, GRAYISH OLIVE GRAY (5GY3/2), WET, SAND IS M-C., GLAUCONITIC, SOME SHELLS		SAMPLE S9 HNU IS 2 PPM, NO ODOR PRESENT. NOTE: SOME PAINTERS WERE WORKING ~100' UPWIND OF OUR LOCATION ON 2/4 AND 2/5.
60							

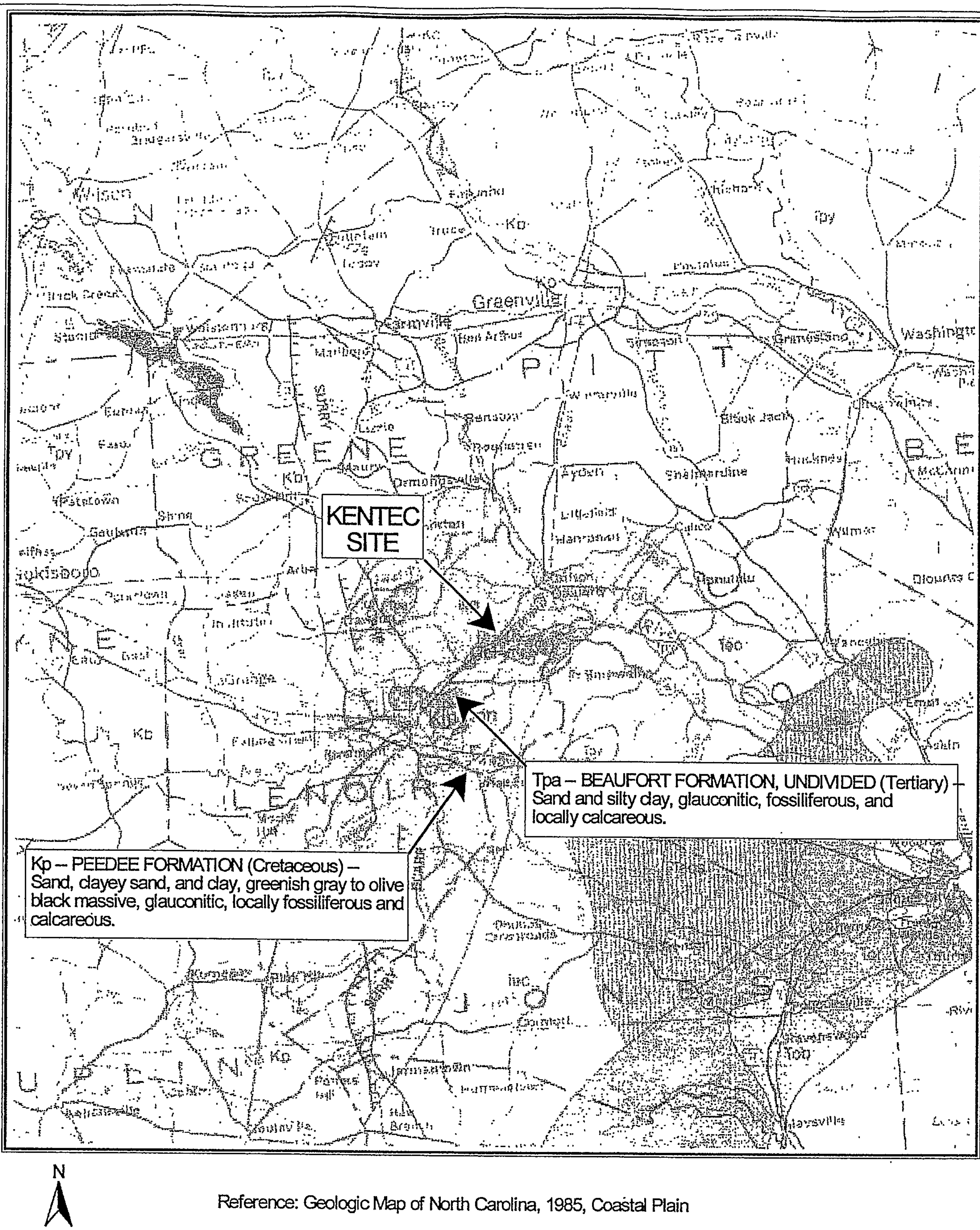
CH2M HILL

PROJECT NUMBER: ATL22398.F0 | BORING NO.: MW17C | SHEET: 4 of 6

SOIL BORING LOG

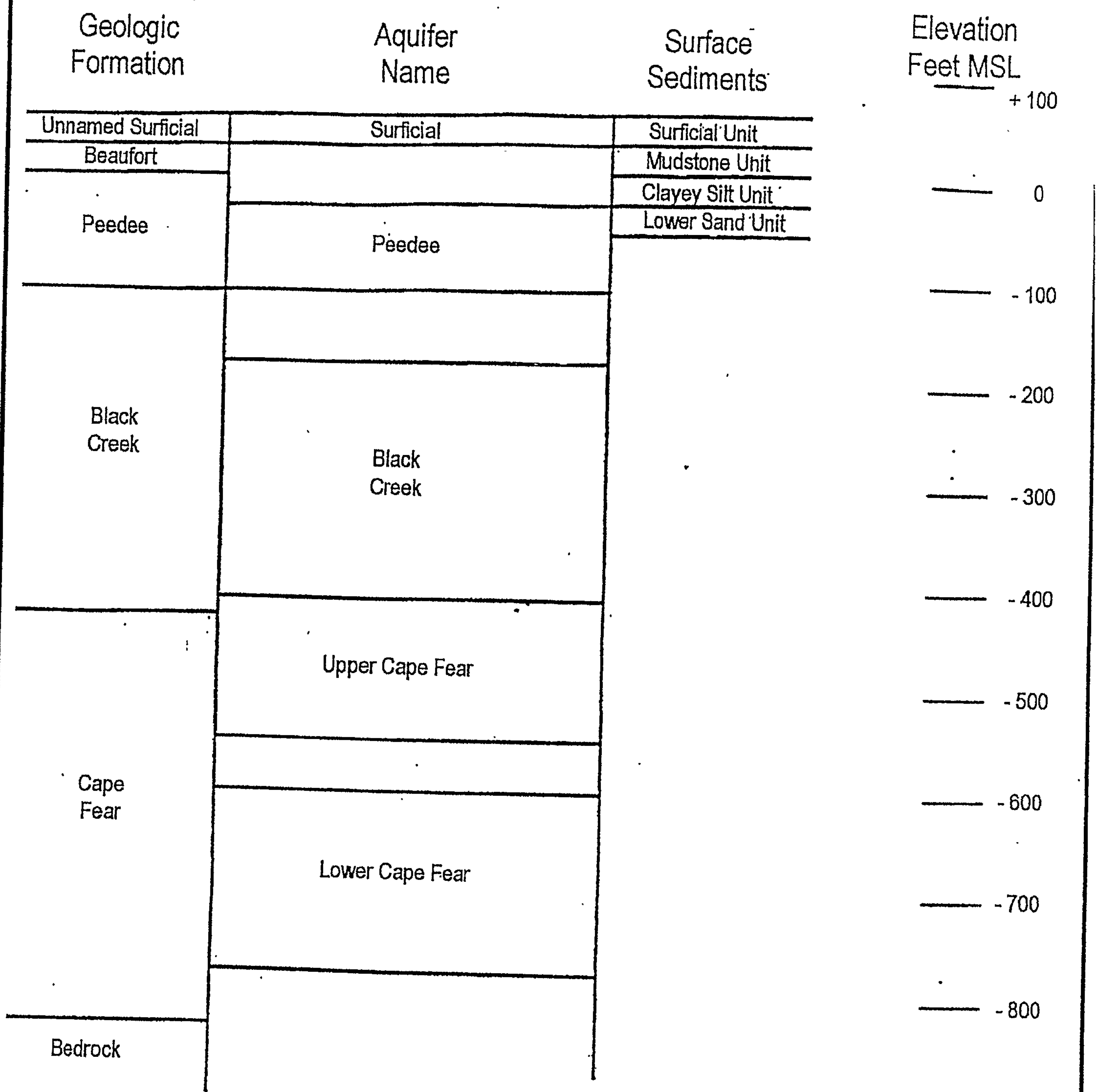
PROJECT: DUPONT KENTEC
LOCATION: LENOIR CO., NC
ELEVATION: ~30 FT MSL
DRILLING CONTRACTOR: HARDIN-HUBER INC.
DRILLING METHOD AND EQUIPMENT: 12" AND 8" MUD ROTARY W/A FAILING F-7
WATER LEVEL AND DATE: 12.1' on 2/21/91 START: 1/23/91 FINISH: 2/5/91 LOGGER: A. BRYDA

DEPTH BELOW SURFACE	DEPTH INTERVAL	TYPE AND NUMBER	REC	STD. PEN. TEST 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY, USCS GROUP SYMBOL	SYMBOLIC LOG	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TEST AND INSTRUMENTATION
	60-62	S10	1.0	21-41--58/4" (99)	SAME AS S9		SAMPLE S10 HNU IS 3 PPM
65	65-67	S11	1.3	13-40--62-50/2 (102)	SAME W/ VC. SAND SEAMS FROM 0-4"		SAMPLE S11 HNU IS 3 PPM
70	70-72	S12	1.0	20-37--100/5"	SAME AS ABOVE W/O VC. SAND		SOME CIRCULATION LOSS SAMPLE S12 HNU IS 2 PPM
75	75-77	S13	0.9	20-30--65-50/3 (95)	SAME		SAMPLE S13 HNU IS 1 PPM
80							



Reference: Geologic Map of North Carolina, 1985, Coastal Plain

DUPONT CORPORATE REMEDIATION GROUP *An Alliance between* *DuPont and URS Diamond* 6324 Fairveiw Road Charlotte, NC 28210	TITLE: Area Geologic Map DuPont Kentec Facility	DRAWN: EA CHECKED: MH FILE NAME: geomap.apr	APPROVED: AFA DATE: 6/18/01 REVISION:	PROJECT NO.: FIGURE NO.:



DUPONT

Corporate Remediation Group
An Alliance between DuPont and The W-C Diamond Group

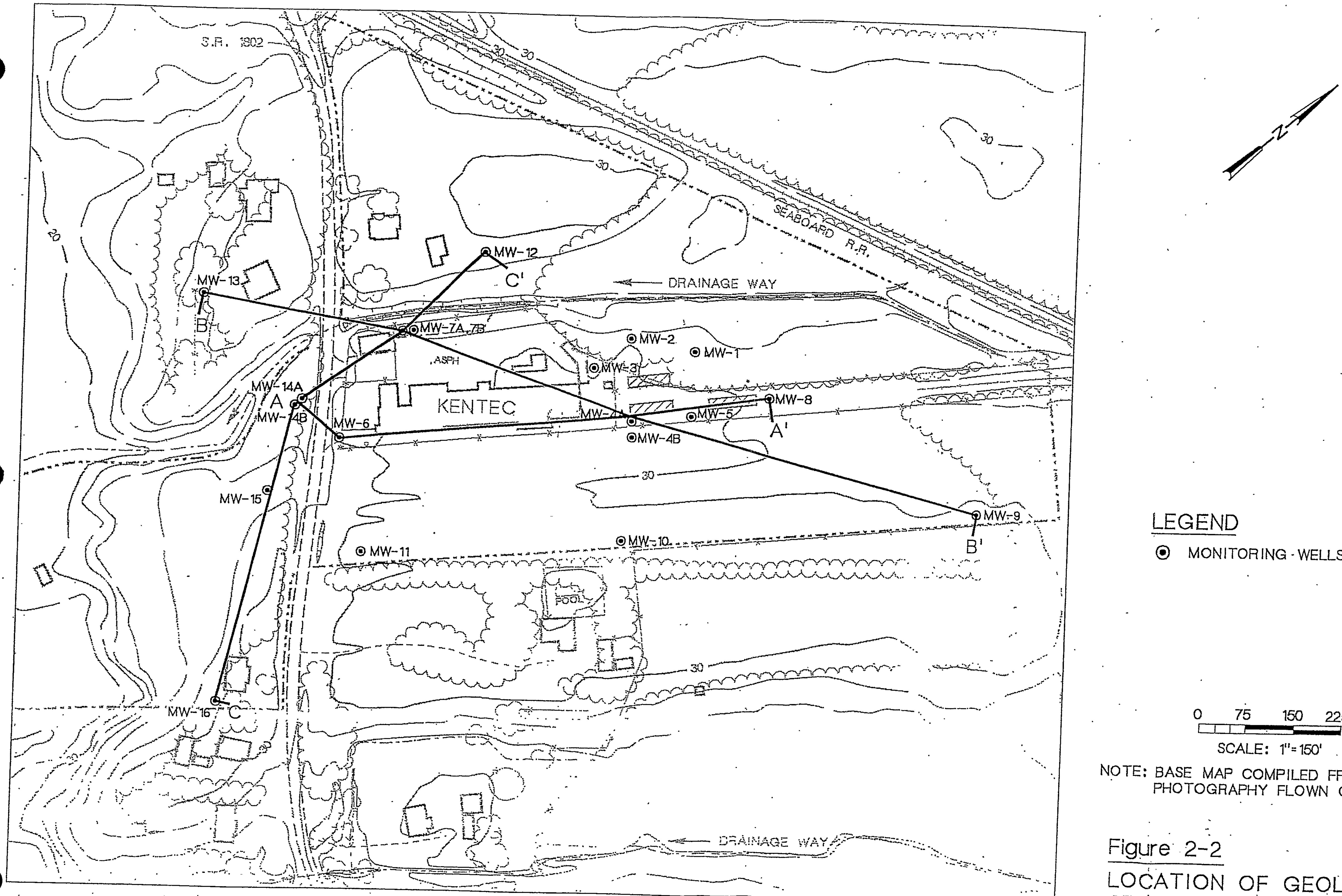
140 Cypress Station Drive, Suite 140
Houston, Texas 77090

TITLE:
Geologic Formations and Associated Aquifers
RFI Phase I Report
DuPont Kinston Plant

DWN:
APPD: DEE
CHKD: RLL
REV.:
DATE: 7/17/00

PROJECT NO.: 4127-52

FIGURE NO.: 15



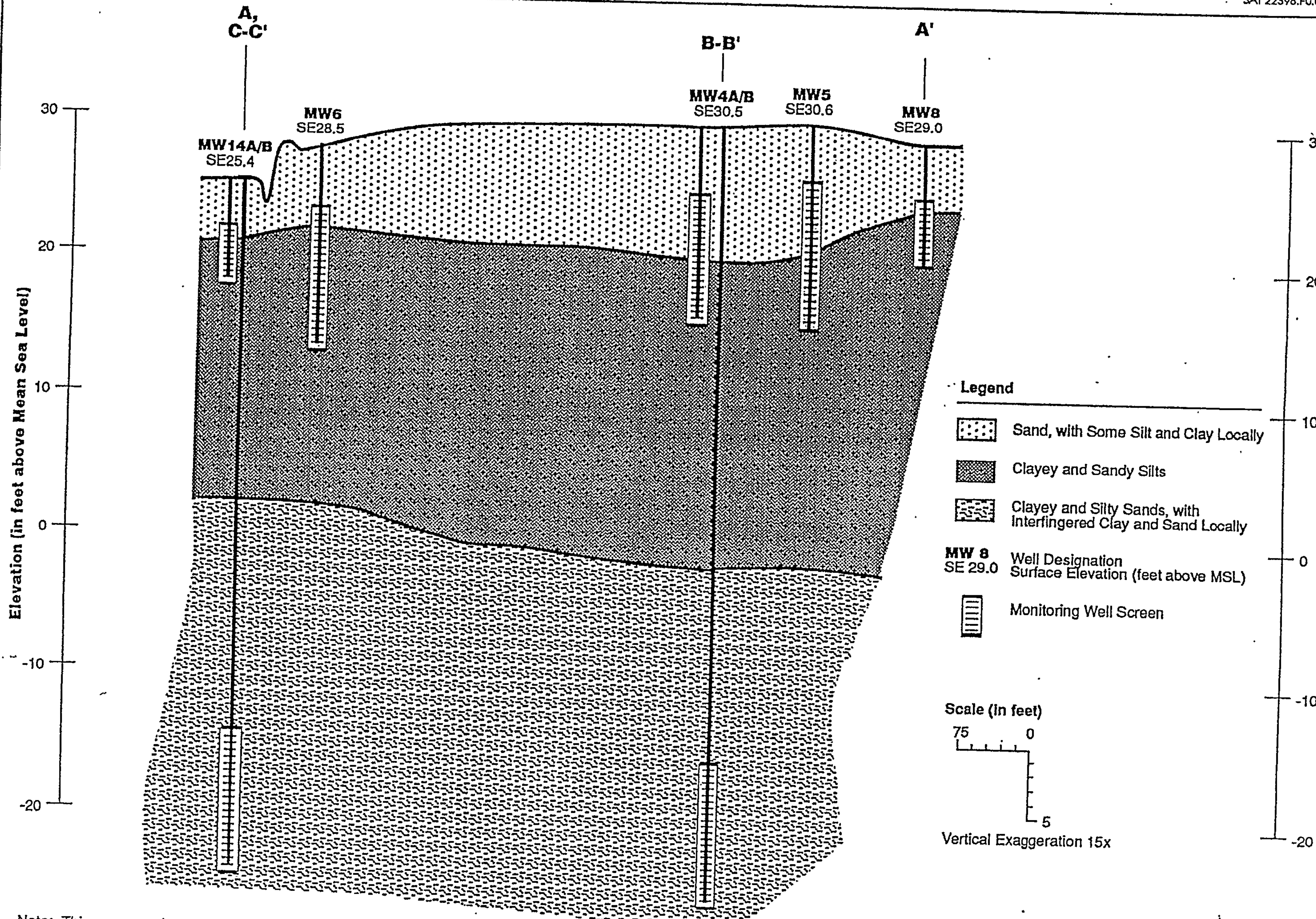
NOTE: BASE MAP COMPILED FROM AERIAL PHOTOGRAPHY FLOWN ON 2/10/89.

Figure 2-2
LOCATION OF GEOLOGIC CROSS SECTIONS
Du Pont Kentec Facility

CH2M HILL

98fc06.dgn 20-Mar-1991

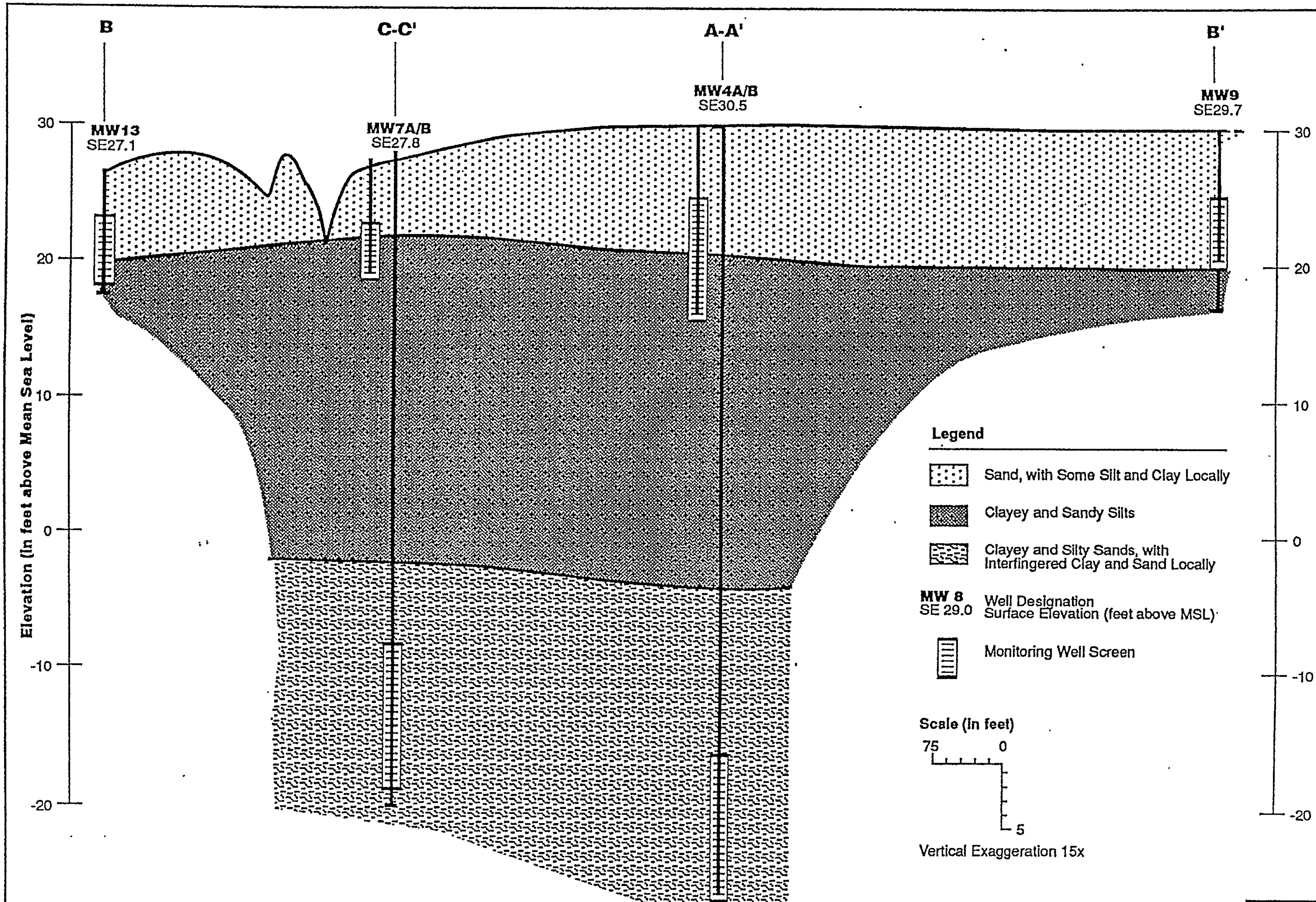
SAT 22398.F0.01/01



Note: This cross-section was interpolated between boring locations. Actual conditions between boring may differ from those shown here.

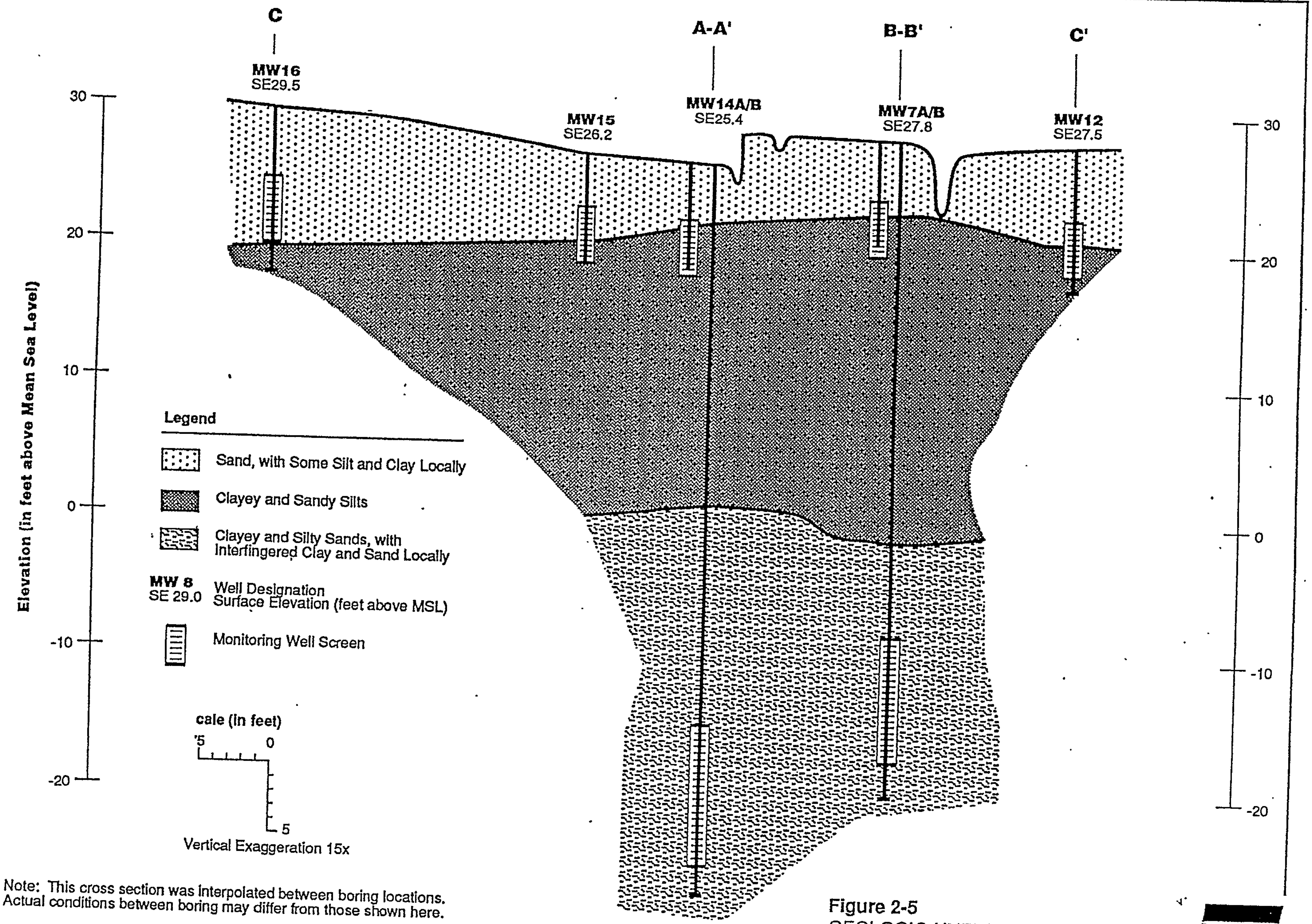
Figure 2-3
GEOLOGIC UNIT CROSS SECTION A-A'
DuPont Kentec Facility

CH2M HILL



Note: This cross section was interpolated between boring locations.
Actual conditions between boring may differ from those shown here.

Figure 2-4
GEOLOGIC UNIT CROSS SECTION B-B'
DuPont Kentec Facility



Note: This cross section was interpolated between boring locations. Actual conditions between boring may differ from those shown here.

Figure 2-5
GEOLOGIC UNIT CROSS SECTION C-C'
DuPont Kentec Facility

CH2MHILL

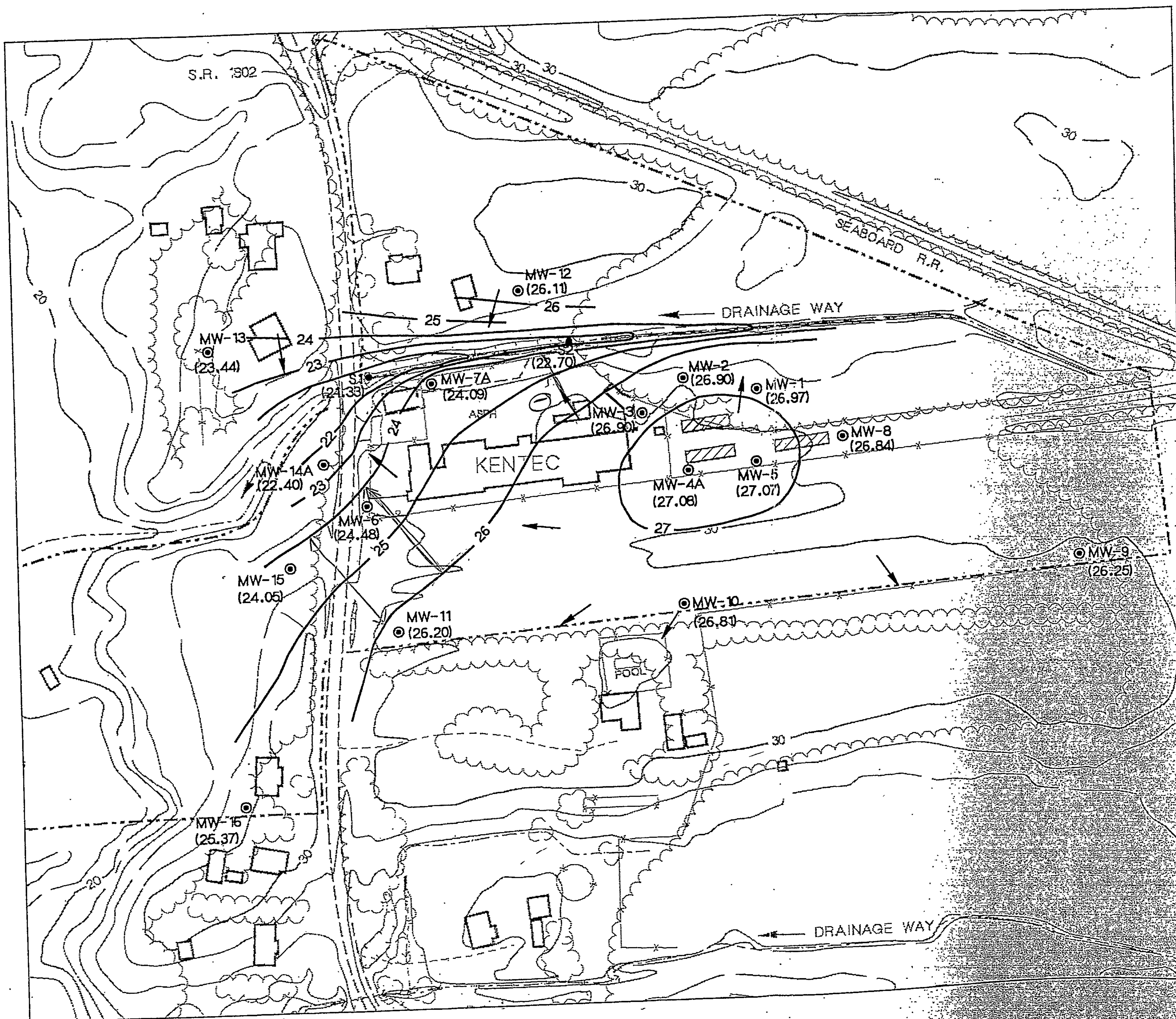
APPENDIX B

$\frac{1}{60} = 0.02$ ft/ft

1 $\Delta h = 1$ foot

$\frac{2}{165}$ 0.01

$v = \frac{Ki}{n_e}$



LEGEND

- • (21.33) SURFACE WATER MEASURING POINT WATER LEVEL MEASURED
- ⊙ (26.65) SHALLOW MONITORING WELL WATER LEVEL MEASURED
- —26— EQUIPOTENTIAL LINE (IN FEET ABOVE MSL)
- ← APPROXIMATE DIRECTION OF GROUNDWATER FLOW

EQUIPOTENTIAL LINES ARE INTERPOLATED BETWEEN DATA POINTS.

0 75 150 225

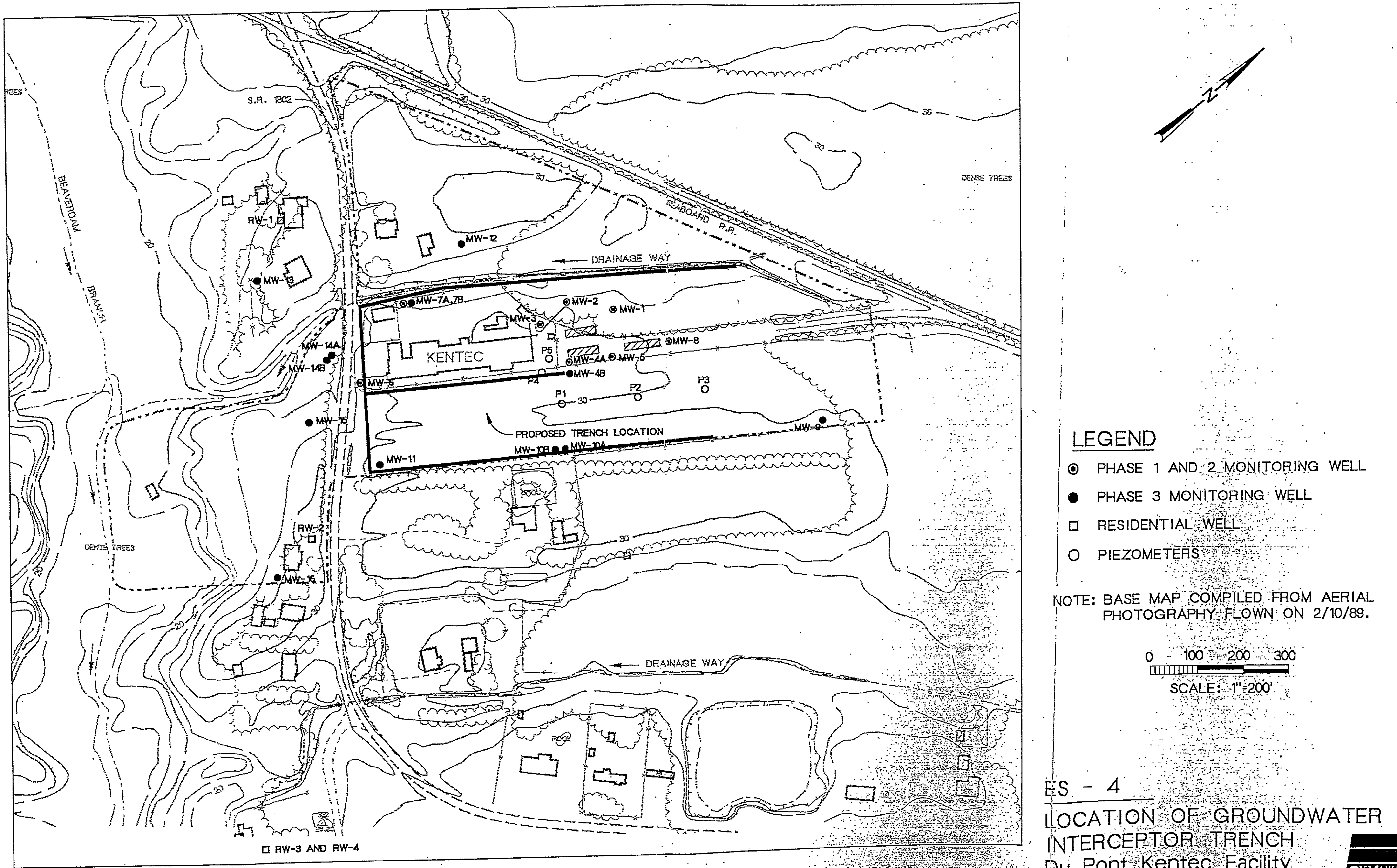
SCALE: 1"=150'

NOTE: BASE MAP COMPILED FROM AERIAL PHOTOGRAPHY FLOWN ON 2/10/89.

Figure 2-2

POTENTIOMETRIC SURFACE IN SURFICIAL AQUIFER FEBRUARY 1, 1990
Du Pont Kentec Facility

CH2M HILL



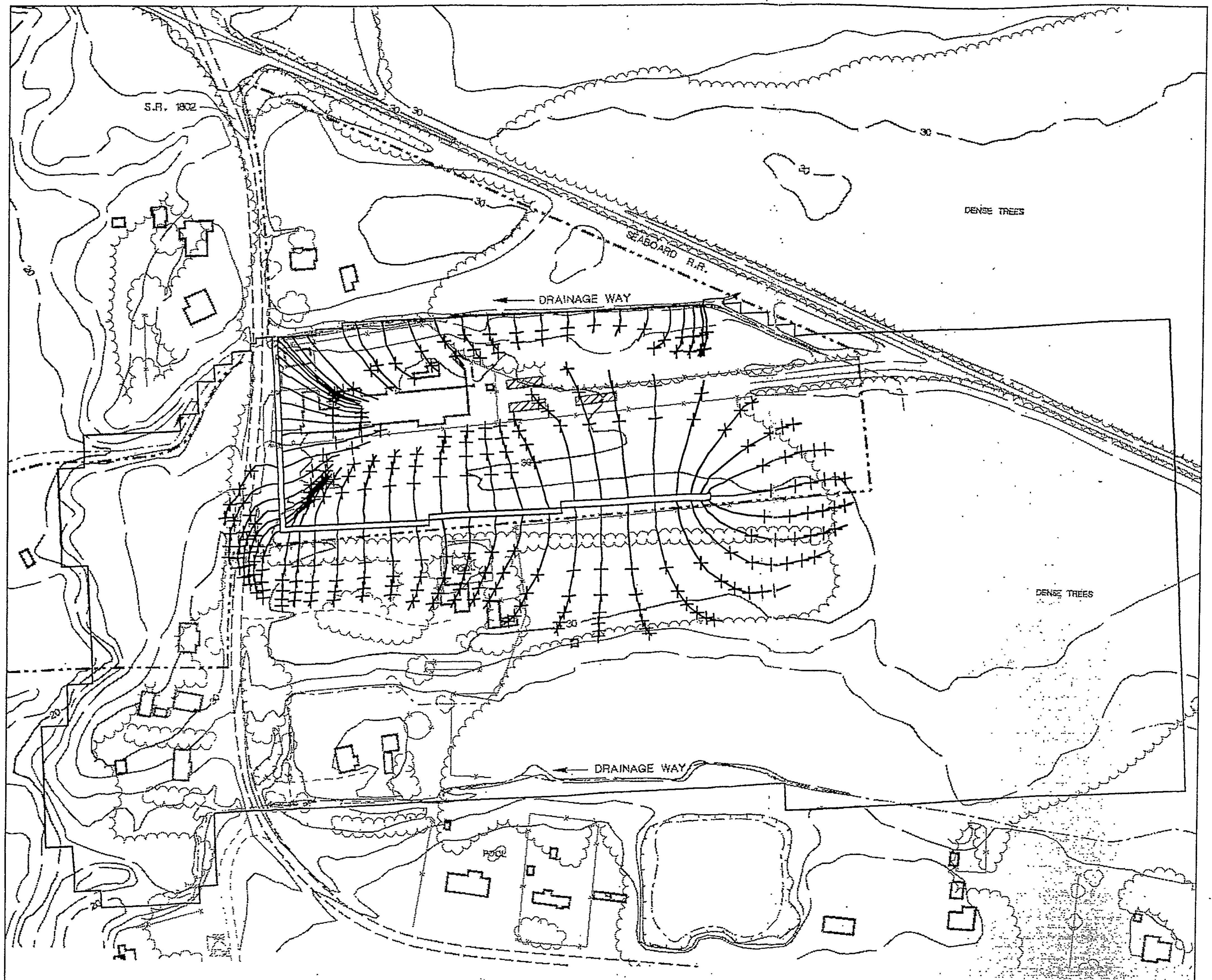
ES - 4

LOCATION OF GROUNDWATER INTERCEPTOR TRENCH

Du Pont Kentec Facility

CH2M HILL

2388f056.dgn 3-Jul-1991



NOTE: BASE MAP COMPILED FROM AERIAL PHOTOGRAPHY FLOWN ON 2/10/89.

0 100 200 300
SCALE: 1"=200'

Figure A-3
PATHLINES OF PARTICLES CAPTURED BY THE BASIC RECOVERY TRENCH UNDER DRY SEASON CONDITIONS, BASE CALIBRATION
Du Pont Kentec Facility

CH2M HILL

2398wm24.dgn 11-Jul-1991

APPENDIX C

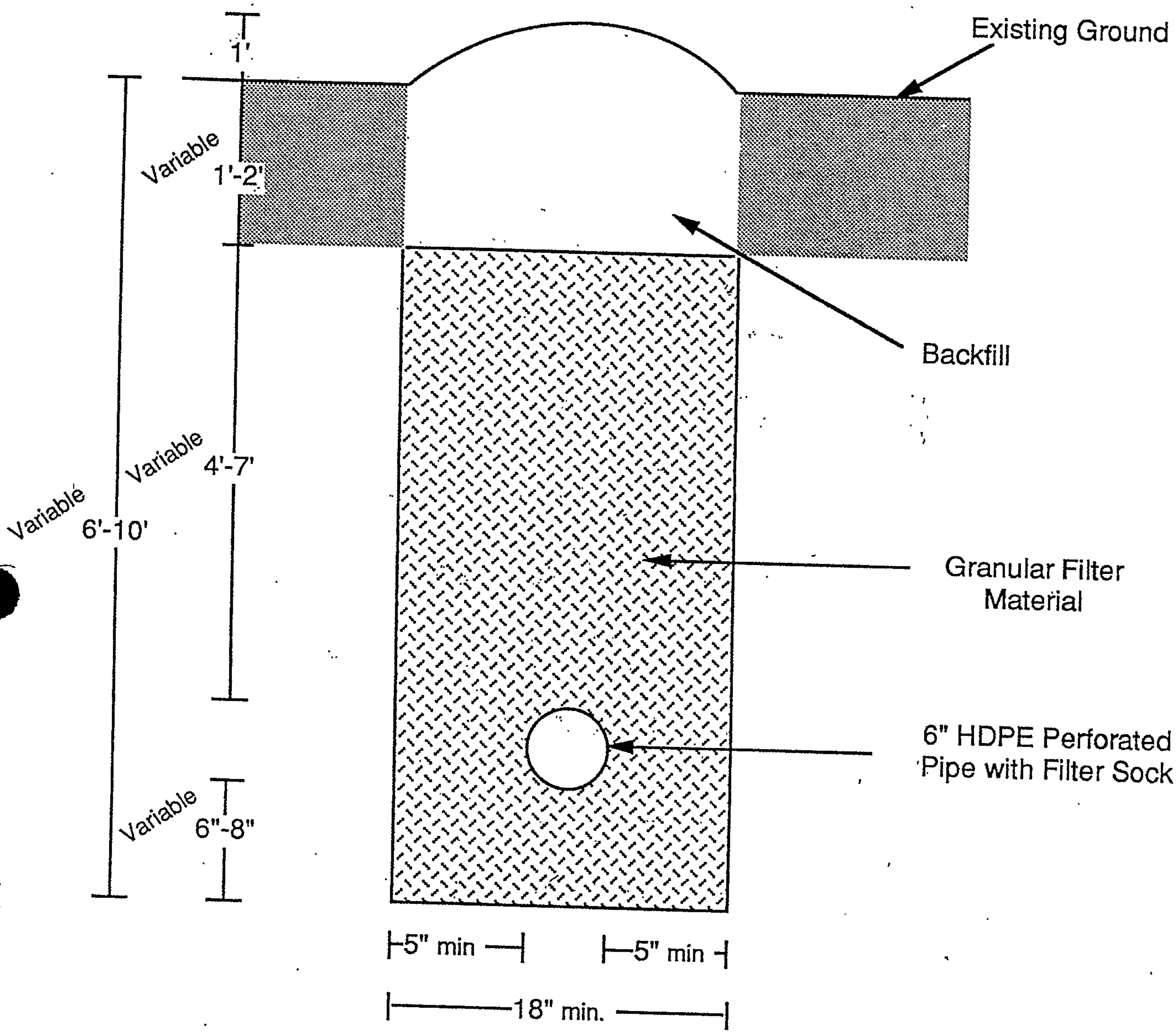


Figure ES-5
Typical Cross-Section of Groundwater Interceptor Trench

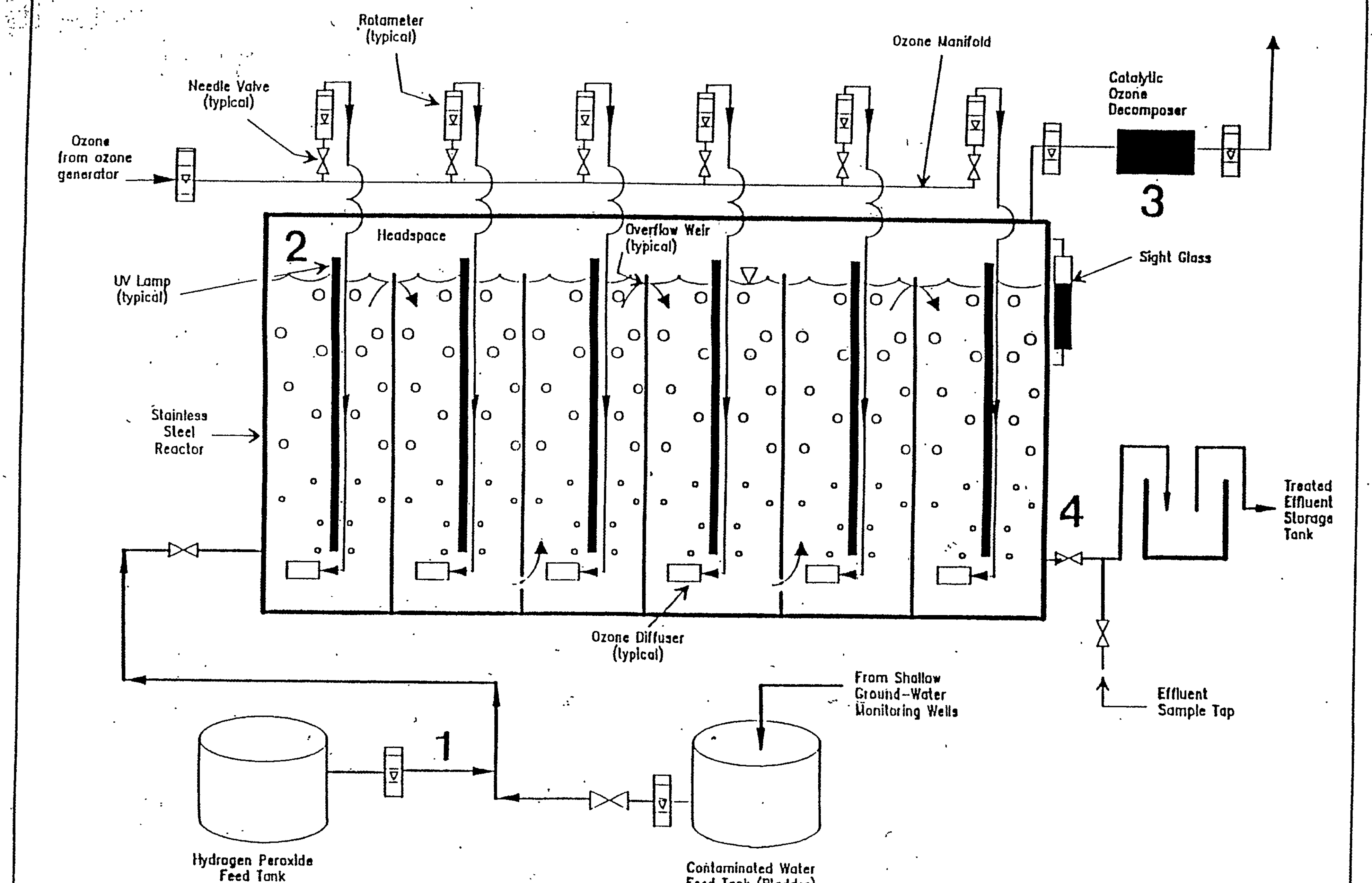


Figure ES-6
Chemical Oxidation System